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## Cultural Resource Inventory and Testing in the Salt Creek Pocket and Devils Lane Areas, Needles District, Canyonlands National Park, Utah

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**Cultural Resource Inventory and Testing in the  
Salt Creek Pocket and Devils Lane Areas,  
Needles District, Canyonlands National Park, Utah**

by

**Betsy L. Tipps and Nancy J. Hewitt**

No. 1  
1989

**SELECTIONS from the DIVISION OF CULTURAL RESOURCES**  
**Rocky Mountain Region**  
**National Park Service**



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Cultural Resource Inventory and Testing in the  
Salt Creek Pocket and Devils Lane Areas,  
Needles District, Canyonlands National Park, Utah

by  
Betsy L. Tipps and Nancy J. Hewitt

with contributions by  
Nancy J. Coulam, William A. Lucius and Alan R. Schroedl

Prepared under the supervision of  
Alan R. Schroedl  
Principal Investigator

Submitted in partial fulfillment of Contract CX 1200-4-A063

to  
National Park Service  
P.O. Box 25287  
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## FOREWARD

**Cultural Resource Inventory and Testing in the Salt Creek Pocket and Devils Lane Areas, Needles District, Canyonlands National Park,** is the first of a series of National Park Service monographs dealing with the historic and prehistoric cultural resources within the Rocky Mountain Region. This region is charged with the protection and interpretation of valuable cultural remains on all Park Service lands within the states of North and South Dakota, Montana, Wyoming, Utah and Colorado. We must insure that these remains receive proper preservation, study and interpretation. Part of our responsibility is to disseminate significant new data that results from scientific study of these resources. As a step towards fulfilling this latter obligation, I am pleased to present this first volume in an occasional series of publications on the Rocky Mountain Region's past.

This report was prepared by personnel from P-III Associates, Inc., of Salt Lake City, Utah, under contract to the National Park Service and documents the 1985 season's work, the first of a multiyear archaeological inventory and site evaluation program in Canyonlands National Park. While it is unusual to distribute the first year's results of a multiyear program in so formal a manner, the data herein significantly revise canyonlands' prehistory; it is important that this information be made available.

Lorraine L. Mintzmyer  
Regional Director  
Rocky Mountain Region

**Mission:** As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally-owned public lands and natural and cultural resources. This includes fostering wise use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interests of all our people. The Department also promotes the goals of the Take Pride in America campaign by encouraging stewardship and citizen responsibility for the public lands and promoting citizen participation in their care. The Department also has a major responsibility for American Indian reservation communities and for people who live in Island Territories under U.S. Administration. NPS-D-111.

## ACKNOWLEDGMENTS

This project was funded by the National Park Service under contract CX 1200-4-A063. Adrienne B. Anderson, National Park Service Contracting Officer's Representative, provided a range of necessary and useful support, including maps, technical direction and review comments. She coordinated our research efforts with the park's management needs and created an amiable and effective working relationship among all parties involved in the project. We appreciate her help.

Special thanks are also offered to various National Park Service employees. We especially thank Peter L. Parry, former Park Superintendent, and Dean Garrett, Needles District Manager, for their ongoing interest and enthusiasm in our work, for providing us comfortable camping locations and for loaning us a National Park Service radio during our work in the Grabens. Thea Nordling, Acting Needles District Ranger, served as our in-park liaison. Her concern with our needs and progress translated into an effective working relationship between the National Park Service and P-III Associates. Her interest in protecting, preserving and understanding the park's cultural resources is most appreciated.

We thank Larry Agenbroad, Northern Arizona University, and various park personnel for fruitful discussions regarding the focus and outcome of our research. We are grateful to Carl Phagan for his observations on the lithic materials recorded during the project. We also appreciate the review comments provided by Chas Cartwright, Canyonlands National Park Archeologist, Ann Johnson, National Park Service Archeologist, and several reviewers from the Midwest Archeological Center. Finally, we thank Steve Manning for his useful and insightful comments on the rock art.

Many of P-III Associates' staff members contributed their time, effort and ideas to the project. William A. Lucius supervised the survey and evaluated the existing collections from Canyonlands National Park. Betsy L. Tipps aided with supervisory responsibilities during the survey and directed the testing. The survey crew consisted of Denise E. Copeland, Whitney S. Kim, Gary M. Popek and Andrea J. Tucker. James W. Copeland volunteered for a few days. Although the survey crew was paid to perform the day-to-day field tasks, they deserve a special thanks for their good humor and high-quality work, despite the cold, rain and insects.

In the laboratory, Lucius wrote the environment section and preliminary drafts of several other report chapters. Nancy J. Hewitt and Betsy L. Tipps revised several of Lucius' preliminary chapters. Tipps compiled and analyzed the site, feature and artifact data, wrote several chapters and finalized, compiled and edited the final report. Nancy J. Coulam identified the plant macrofossils from the flotation samples collected at the tested sites and wrote a section discussing the results. Various laboratory tasks were accomplished by K. Renee Barlow, June D. Freedman, Gary M. Popek and T. Todd Prince. Michelle A. Sanders turned the handwritten records into typewritten site forms, typed several drafts of the report and helped with final proofing. Drafting was accomplished by Mark D. Newton and T. Todd Prince.

Alan R. Schroedl  
Principal Investigator  
11/88

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## ABSTRACT

This document is the final technical report on the first phase of a multiyear cultural resource program conducted for the National Park Service in Canyonlands National Park. The purposes of this multiyear project are to gather information for upgrading the park interpretive program, increase the scientific understanding of Canyonlands prehistory and determine the research potential of extant collections and archeological records. The project is also intended to provide information for various management actions. The first year of work, which is reported in this document, involved an intensive pedestrian inventory of approximately 4500 acres in the Needles District of the park, limited testing at two sites to obtain chronological and subsistence information, formulation of a preliminary research design to guide future investigations, and a cursory review of existing collections to determine their nature and research potential.

The pedestrian inventory of 4000 acres in the Salt Creek Pocket Area and 500 acres in the Devils Lane Area resulted in the identification and documentation of 142 sites and 76 isolated finds. Most of the identifiable cultural materials are attributable to Archaic and Mesa Verde Anasazi peoples, though limited evidence of Fremont and Euroamerican utilization is also evident. Approximately half of the sites are limited activity loci that were used for lithic procurement, lithic reduction and tool manufacture. Other site types reflect more

intensive utilization of the park for a wider range of domestic and economic activities. A variety of rock art sites was also found which predictably exhibit Archaic, Anasazi and Fremont style figures and designs.

The testing involved partial excavation of hearth features at two sites, one in the Salt Creek Pocket Area and one in the Devils Lane Area, and revealed that both were used during the Late Archaic period. The features contained macrofossils of nine and eight taxa, respectively, including various chenopods, grasses and trees.

The research design formulated for the project addresses research questions in four major problem domains: Cultural Affiliation and Chronology, Settlement Patterns, Environmental Adaptation and Cultural Interaction. The cursory evaluation of existing collections revealed that even though they are poorly provenienced, several interesting research questions in the four problem domains can be addressed through in-depth analyses conducted using modern techniques and research standards.

Fieldwork and research conducted during the first year of this ongoing project has substantially altered some of the early interpretations regarding prehistoric occupation within the Canyonlands area. The project demonstrated the presence of a substantial, but previously undocumented, Archaic occupation, and also showed that Fremont occupation of the Needles District was minimal, if it occurred at all.

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## Chapter 1

# INTRODUCTION

by Betsy L. Tipps

In the spring, summer and fall of 1985, P-III Associates, Inc., conducted the first phase of a multiyear cultural resource program in Canyonlands National Park. This work consisted of preparing a research design to guide future work on prehistoric cultural resources in the park, intensively inventorying of 4500 areas in the Needles District, conducting limited testing at two sites and cursorily examining existing park collections to ascertain their research potential. The project was conducted for the National Park Service under Contract CX 1200-4-A063 and constituted the first phase of the Canyonlands Archeological Project, a multiyear cultural resource program that includes inventory, collections research and limited testing.

The Canyonlands Archeological Project being conducted by P-III Associates is part of a larger multidisciplinary research program that includes studies of the Late Quaternary (late Pleistocene and Holocene) geology and paleoenvironment, detailed rock art research, prehistoric ruins stabilization, historic site studies and mitigative excavations. The environmental investigations are being conducted by Northern Arizona University (e.g., Agenbroad 1986a), Native American Rock Art Research Associates is responsible for the rock art studies (e.g., Noxon and Marcus 1985) and Nickens and Associates is conducting the

ruins stabilization (e.g., Chandler 1988; Chandler et al. 1986; Firor and Eininger 1987; Metzger 1983; Metzger and Chandler 1986). The investigation of historic sites is being undertaken by Western Historical Studies, Inc. Slightly earlier research, consisting of cultural resource inventory in Davis and Lavender canyons (Griffin 1984; Osborn et al. 1986) and mitigative excavations in Island-in-the-Sky, was undertaken by National Park Service personnel from the Midwest Archeological Center in Lincoln, Nebraska.

The ultimate purpose of this interdisciplinary research program is to provide data for developing a strong, well-integrated, interpretive program that will enhance the average visitors' park experience. In part, this goal will be achieved through the eventual preparation of a multi-authored, popular synthesis of Canyonlands' past that incorporates information from all of the cultural resource and environmental studies (National Park Service 1984). In addition to fulfilling this management goal, each of the projects is oriented to gather scientific data that can be used to enhance the scientific understanding of Canyonlands' past.

The objectives of the Canyonlands Archeological Project, which constitutes a large part of the interdisciplinary research program, are to (1) significantly strengthen

## INTRODUCTION

and upgrade the existing interpretive program concerning archeology, (2) increase the scientific understanding of Canyonlands prehistory, (3) provide information for various management actions (Section 106 compliance activities; National Register of Historic Places nominations; Resources Management Plans; and Environmental Assessments), and (4) determine the research potential of the extant collections and the existing archeological data base. While it is recognized that Canyonlands archeology is significant, there is only a general understanding of how and why it is significant. The National Park Service also needs good documentation to aid in its preservation efforts.

The project objectives are to be accomplished by (1) the preparation of a modifiable research design to guide future investigations concerning prehistoric cultural resources in the park, (2) intensive inventory of selected areas that have high visitor impact, (3) intensive inventory of small areas for research purposes, (4) analysis of existing survey and excavation records and collections, and (5) limited testing to obtain chronological and subsistence information.

The scope of work also requires that the project contribute to other aspects of the multidisciplinary research program by documenting localities of paleoenvironmental significance (e.g., pack rat middens, paleosols, etc.), noting all rock art localities and performing preliminary assessments of stabilization needs at sites recorded during the survey. Management tasks required by the project include evaluating all sites recorded by the survey for significance and eligibility to the National Register of Historic Places, and updating and correcting the existing Canyonlands data base.

Depending on funding, the National Park Service anticipates that the Canyonlands Archeological Project will continue for four years. If funded, each of the tasks noted above will be carried out through subsequent years, with revision and expansion of the research design as

knowledge about the park's prehistory and paleoenvironment grows. Technical reports will be prepared at the end of each contract year summarizing the results of that year's work and one final synthetic report will be prepared at the end of the project to accompany the popular synthesis prepared for visitors.

This report documents the results of the first year's field inventory and testing, and presents the initial version of the research design which will guide future cultural resource inventory during this multiyear project. A short summary of existing collections and various management information is also provided.

The contract requires that this and subsequent yearly reports be descriptive in nature and usable by park interpretive personnel in addition to our professional peers. While the present report is intended to summarize and interpret the archeological data in a professional manner, the research design and data presentation are in some ways constrained by this mandate. Also, to reduce redundancy and increase cost efficiency, the National Park Service has requested that general overview information normally included in technical reports be eliminated from the yearly reports, and only included in the final synthetic report prepared at the end of the project. Chapter 2 therefore discusses the environmental setting and previous research as it directly pertains to the survey parcels, but the regional context of the project area is only briefly discussed.

## Location

Canyonlands National Park is located in southeastern Utah, southwest of Moab, northwest of Monticello and east of Hanksville, Utah (Figure 1). The park straddles the confluence of the Colorado and Green rivers and covers portions of western San Juan and eastern Wayne and Garfield counties. It is subdivided into three districts. The Maze District lies west of the Green and Colorado rivers; the

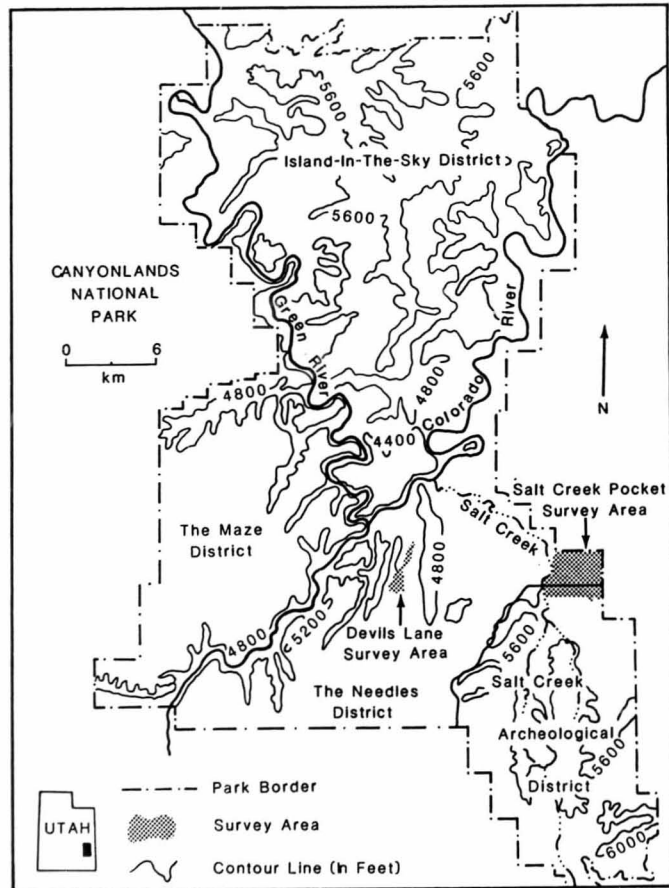


Figure 1. Canyonlands National Park showing the districts and the locations of the 1985 survey areas.

Needles District includes all of the park land east and southeast of the Colorado River. The area between the Colorado and Green rivers comprises Island-in-the-Sky. Although this multiyear research project may include analysis of data and collections from all three districts, the first year of fieldwork was confined to two block areas in the Needles District. These areas are referred to as the Salt Creek Pocket and Devils Lane survey areas, respectively.

The National Park Service selected the Salt Creek Pocket Area for inventory because it needs to know more about (1) prehistoric human utilization in and around the Salt Creek Archeological District for management and interpretive purposes and (2) the nature and extent of cultural resources that could be indirectly affected by construction of the proposed nuclear waste dump on adjacent Bureau of Land Management property (Lindsay et al. 1984). The Devils Lane Area was chosen by P-III Associates after reviewing data gaps about Needles District prehistory and discussions with Needles District personnel about their management needs. Prior to the survey, the Devils Lane Area and indeed all of the Grabens was undocumented archeologically, but known to have sites very different than those in the Salt Creek Archeological District and work was desirable to determine the research potential of this area.

The Salt Creek Pocket Area is a roughly square, 4000-acre block located east of the Squaw Butte Ranger Station near the eastern boundary of the Needles District (Figure 1). It covers lower Salt Creek where the wash first emerges from the canyon onto the gently sloping flats, as well as the dry sandy pockets or rock-rimmed coves east of the wash. The park boundary defines the northern and eastern limits of the survey area, with the western edge of the Salt Creek floodplain serving as the general western boundary. The southern extent of the survey area is defined by the north-facing cliff line that marks the southern boundary of Salt Creek Pocket

and an arbitrary line extending due west to the western edge of the Salt Creek floodplain (Figure 2). The Salt Creek Pocket Area lies in and adjacent to the Salt Creek Archeological District (Figure 1), a property listed on the National Register of Historic Places because of its archeological value.

The second survey parcel, referred to as the Devils Lane Area, is an elongate block located in the western portion of the Needles District in an area known as the Grabens. This 500-acre survey unit includes the Devils Lane graben (the second easternmost in a series of named grabens), a portion of Butler Flat and the lower stretch of Chesler Canyon (Figure 3), a wide, moderately deep gorge that drains into Red Lake Canyon and eventually the Colorado River. The northern boundary of this survey area coincides with the northern end of the Devils Lane graben and the top of the Silver Stairs. The inventory area extends southwest between the vertical cliffs of the graben and ends at an arbitrary boundary in Butler Flat, south of Chesler Canyon (Figure 3). Though it includes portions of Butler Flat and Chesler Canyon, the entire survey parcel is named after Devils Lane, the most prominent geographic feature. Legal locations of the two survey parcels are presented in Appendix A.

## Results

The field inventory was conducted between April 15 and May 20, 1985, by a crew of three to five individuals. The pedestrian inventory resulted in the discovery and documentation of 142 prehistoric and historic sites and 76 isolated finds. With a total of 7.03 mi<sup>2</sup> surveyed, there are an average of 20.2 sites and 10.8 isolated finds/mi<sup>2</sup> within the overall inventory area. A total of 101 archeological sites and 66 isolated artifacts was recorded in the Salt Creek Pocket Area resulting in an average density of 16.2 sites/mi<sup>2</sup>. The remaining 41

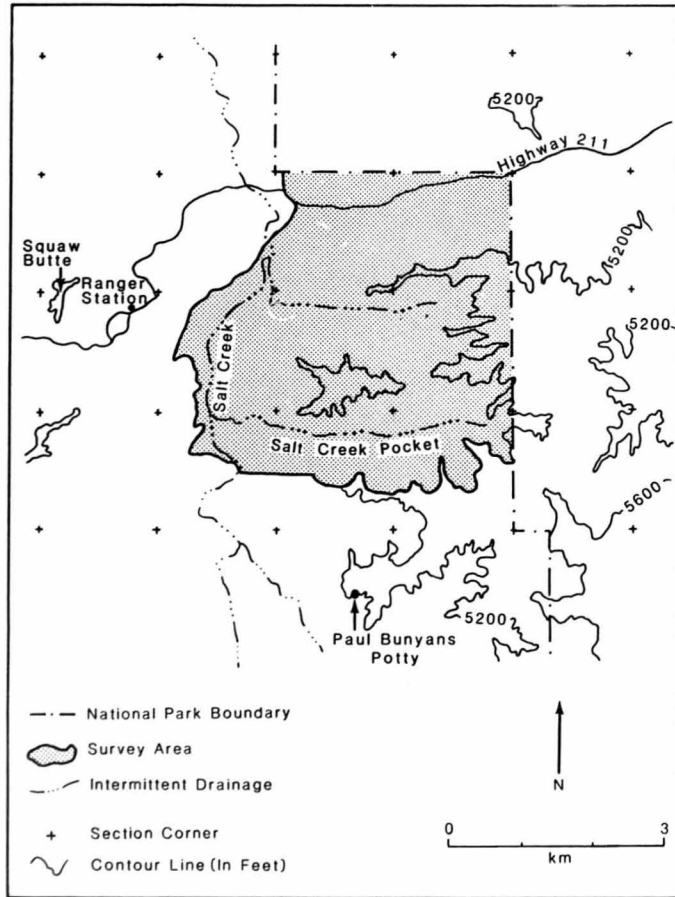


Figure 2. The Salt Creek Pocket Area.

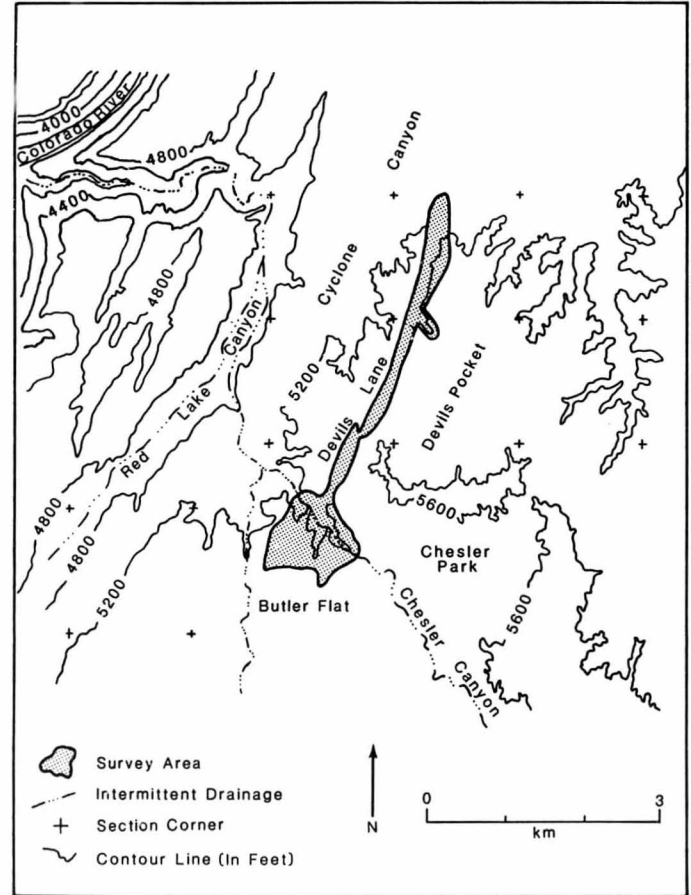


Figure 3. The Devils Lane Area.

## INTRODUCTION

sites lie in the Devils Lane Area which has an extrapolated average of 52.5 sites/mi<sup>2</sup>.

The 142 sites recorded during the project represent 153 components, 15 Archaic, 1 Basketmaker/Anasazi, 38 Anasazi, 1 possible Fremont, 93 Aboriginal and 5 Euroamerican. The possible Fremont site consists of two Southern San Rafael Fremont Style anthropomorphs; these figures were not necessarily made by Fremont peoples, however, and could represent imitation by the Anasazi or some other cultural group.

Although most of the Archaic sites are undated within the long Archaic period, Early, Middle and Late Archaic sites were all identified. The Anasazi sites all appear to be the result of occupation by the Mesa Verde Anasazi with occupation concentrating during Pueblo II-III but occurring from Basketmaker III through Pueblo III. The

five Euroamerican sites and components mostly relate to ranching activities and date to the late 1800s through the mid-1900s.

Approximately half of the aboriginal sites and components (53.4%) reflect limited activity and were probably used for a short period of time. The remainder contain evidence of longer, or slightly more intensive occupation such as stratified cultural deposits or masonry structures, and are considered field camps (39.2%) or habitations (7.4%). Most of the limited activity sites seem to result from lithic procurement, lithic reduction, tool manufacture and communication through rock art. In general, both areas seem to have been utilized on an intermittent basis for resource exploitation and short-term occupation.

END OF PAGE

## Chapter 2

# BACKGROUND INFORMATION

by William A. Lucius

**T**his chapter briefly summarizes the local environment, previous archeological investigations and culture history of Canyonlands National Park to provide a background for interpreting the results of the 1985 investigations. More detailed accounts of these three topics will be presented in the final synthetic report at the completion of this multiyear investigation.

### The Present Environment

by William A. Lucius and Betsy L. Tipps

Because two physically distinct survey areas were included in the project, their environmental characteristics are described separately. This section includes discussions of the effective environment, that is, the vegetational and physiographic features that may have affected or been attractive to the prehistoric inhabitants. Additional discussion of natural resources available to and used by prehistoric peoples inhabiting the project area can be found in the Phase I report prepared by the Quaternary research team (Agenbroad and Hevly 1986:149-152).

### Salt Creek Pocket Area

Most of the Salt Creek Pocket Area is characterized by a severely eroded landscape of broad, open-ended, sand-filled

valleys or pockets, bordered by rounded domes and vertical cliffs of slightly tilted Cutler Formation sandstone (Figure 4). The eastern section of the survey area is more open and dotted by a few sharp-edged Moenkopi Formation mesas (Figure 5). Salt Creek, the floodplain of which forms the western boundary of the survey area, is a north-flowing watercourse that drains the southern highlands of the Salt Creek Archeological District (Figure 1). Although the north-south drainage channel carved by Salt Creek provides for easy foot travel and access between adjacent pockets, travel over the sandstone walls separating the pockets might have also been possible by climbing the falling dunes often located against them (Figure 6).

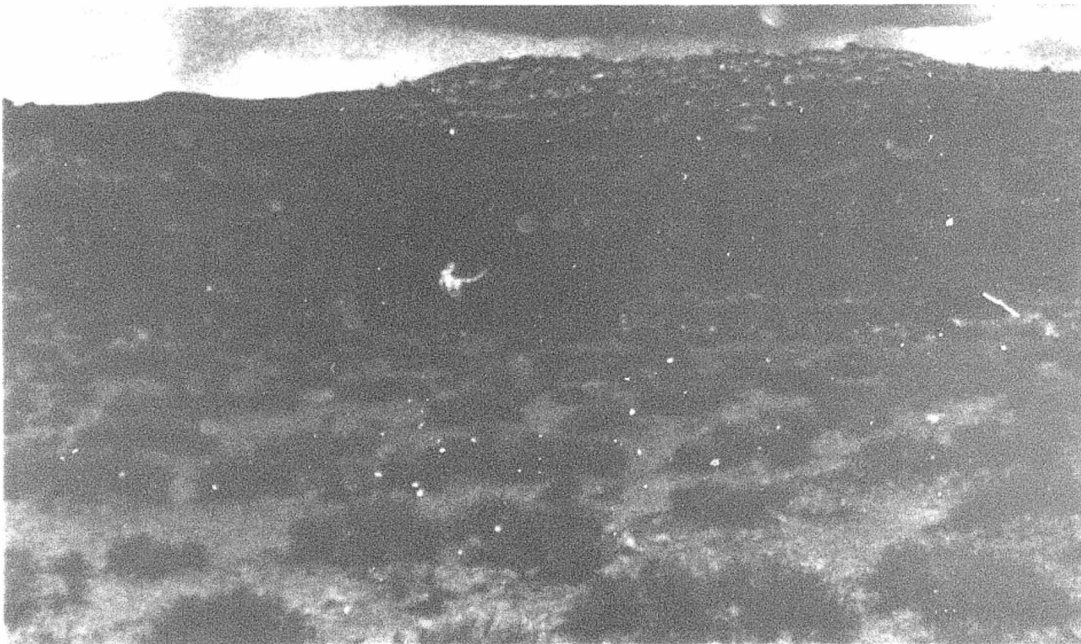
The general aridity of the Salt Creek Pocket Area restricts the occurrence of trees and large bushes to sand/sandstone contacts, rocky talus slopes and the Salt Creek drainage. Juniper and pinyon fringe the rocky outcrops of the uplands, whereas cottonwood, willow and the nonindigenous salt cedar crowd the Salt Creek drainage. Big sagebrush and rabbitbrush are restricted to Salt Creek and the shoulders of the road at the park entrance. Blackbrush stands cover large areas of the sandy pockets.

Within the Salt Creek Pocket Area are many resources that were apparently

## BACKGROUND INFORMATION



**Figure 4. The Salt Creek Pocket Area showing the general physiography.**



**Figure 5. The Moenkopi Formation mesas along the eastern park boundary.**



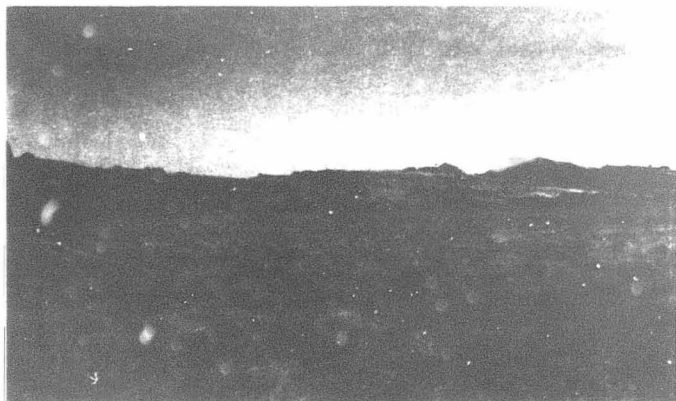


Figure 6. A falling dune in the Salt Creek Pocket Area.

attractive to the prehistoric inhabitants. The rounded sandstone domes and vertical cliffs provide suitable faces for rock art and have eroded to form numerous small overhangs that were employed for shelter prehistorically. Erosion has created extensive lag deposits of chert (Figure 7) and exposed thin lenses of chert throughout the survey area. These cherts were used extensively to make various tools. The broad, sandy pockets today support dense concentrations of Indian rice grass (Figure 8), an economically important protein source. Finally, the specialized ecotone of Salt Creek provides water and arable land in an otherwise arid environment (Figure 9). Water would have also been available seasonally from the many depressions and tanks eroded into the outcropping sandstone.

#### Devils Lane Area

The Devils Lane Survey Area includes the Devils Lane graben, the northeastern portion of Butler Flat and part of Chesler

Canyon (Figure 3). Devils Lane is a long, narrow cleft, or graben, with vertical sandstone walls and open ends (Figure 10). At the northern end of Devils Lane is a sandstone outcrop covered by occasional pockets of sand. The graben floor is composed of colluvium interfingering with eolian sand while talus formations line the vertical walls. Despite the vertical walls of the graben, foot travel throughout the area is easily accomplished.

Butler Flat is an open, elevated sandstone platform south of Devils Lane that overlooks the Colorado River to the west. Sandstone outcrops and hoodoos are common, but most of the area is covered with eolian sand. Chesler Canyon is a north-west-flowing intermittent drainage that marks the north and northeast perimeters of Butler Flat and the south end of Devils Lane. At the southeast end of the Devils Lane Survey Area, Chesler Canyon is composed of a wide, flat, sandy wash and floodplain. To the west, it becomes narrow and



Figure 7. Lag deposits in the Salt Creek Pocket Area.

deeply entrenched in the Cutler Formation and contains many small overhangs that are suitable for human habitation. It joins Butler Wash just west of the survey area and flows into Aztec and Red Lake canyons. Undivided Cutler Formation sandstone predominates in the Devils Lane Area, with block faulting being responsible for the graben formation (Lohman 1974:79).

Natural resources in this area are not as abundant as they are in the Salt Creek Pocket Area. Chert deposits and Indian rice grass occur sporadically, and the lush water and soil conditions of Salt Creek are absent. With the exception of Jimson weed, which is consistently associated with rock art in the Devils Lane Area, other vegetational differences between the grabens area and the uplands away from Salt Creek are not pronounced.

#### BACKGROUND INFORMATION



Figure 8. The Salt Creek Pocket Area showing the abundance of Indian rice grass.

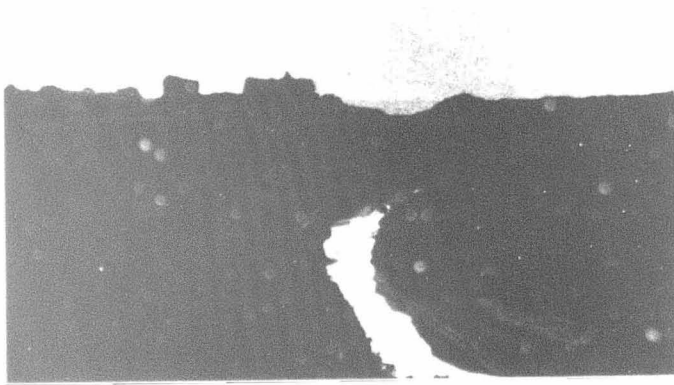


Figure 9. View of the Salt Creek drainage showing the dependable water supply and availability of arable land.

#### BACKGROUND INFORMATION

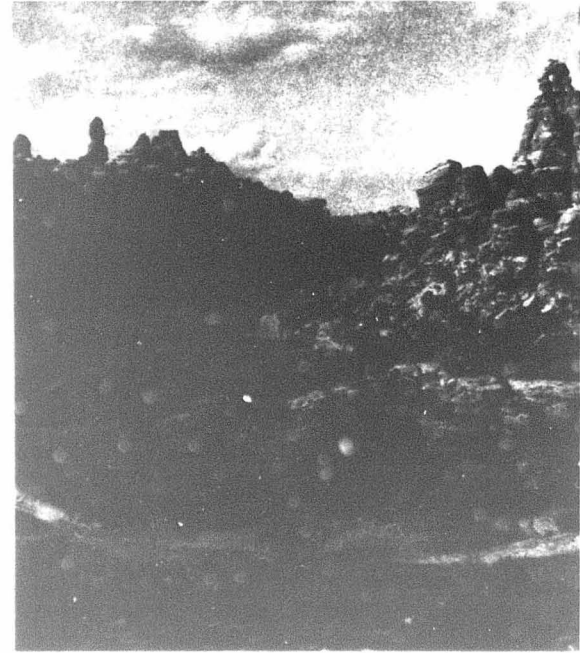


Figure 10. The Devils Lane graben, looking north.

#### Previous Archeological Research

Information concerning cultural resources in the two survey areas was minimal prior to P-III Associates' survey and was limited to informal park records of sites and their locations, and site forms from a few scattered sites. Some of these sites were recorded by Noxon and Marcus (1985) during their rock art investigations

in the Needles. Others were recorded by Sharrock (1966) during his 1965 survey. The area around Cave Springs, which lies adjacent to the Salt Creek Pocket Area, had been partially inventoried by Hartley (1980) and Sharrock (1966).

Several professional archeological investigations have been conducted in surrounding areas including Lavender and Davis canyons (Griffin 1984; Osborn et al. 1986) and Beef Basin south of the park



(Baldwin 1946; Rudy 1955); however, the areas investigated during the 1985 field season had not been inventoried for cultural resources prior to the present survey.

## Culture History

Culture history is a synthesis of specific archeological data intended to present a coherent interpretation of cultural developments and interactions through time. As such, it is regional in scope and difficult to apply to poorly known areas such as Canyonlands National Park. However, previous researchers (Jennings 1978; Sharrock 1966) have suggested that Paleoindian, Archaic, Mesa Verde and Kayenta Anasazi, Fremont, Numic, Ute and Navajo groups inhabited the Canyonlands area.

The possibility of Paleoindian occupation in the Canyonlands area has been inferred on the basis of isolated Clovis, Folsom and Plano points (Copeland and Fike 1988; Nickens 1982), and two Paleoindian camps (Davis 1985; Davis and Brown 1986) found in the Canyonlands vicinity. With the exception of Cowboy Cave—which is located on Bureau of Land Management land near the Horseshoe Canyon Detached Unit of the park (Jennings 1980)—an Archaic presence in Canyonlands National Park has primarily been assumed on the basis of Barrier Canyon Style rock art panels (Schaaafsma 1971) and the surface identification of Archaic camp sites in the Maze District (Lucius 1976)

rather than from securely dated archeological contexts.

Numerous surveys have documented Anasazi sites in the park (e.g., Griffin 1984; Hogan et al. 1975; Losee and Lucius 1975; Osborn et al. 1986; Sharrock 1966). Sharrock (1966) attributes the Anasazi sites in the Needles to the Mesa Verde Anasazi; Osborn et al. (1986) claim to have found Kayenta Anasazi pottery in the Needles and the Anasazi architectural style prevalent in the park resembles the Kayenta style. Fremont use of the park has also been inferred, primarily from the presence of Fremont rock art and pottery (Lucius 1976; Rudy 1955).

Protohistoric Ute and Navajo presence in the park is speculated on the basis of a few petroglyphs in the Maze District (Lucius 1976), a possible hogan in the Needles District (Sharrock 1966) and ethnohistoric records. Euroamerican use of the park has primarily been associated with ranching, mining and tourism.

Previous researchers' extrapolation of regional culture histories to Canyonlands National Park and early interpretations based on scanty data have resulted in vague and probably unrealistic conclusions about prehistoric occupation in the park. The results of P-III Associates' 1985 investigations, coupled with future investigations and the continually evolving research design, will provide a strong foundation for developing an accurate culture history of Canyonlands National Park.

## Chapter 3

# RESEARCH DESIGN

by Betsy L. Tipps, Alan R. Schroedi and Nancy J. Hewitt

As noted in Chapter 1, the primary purposes of the Canyonlands Archeological Project are to strengthen and upgrade the existing interpretive program, provide information for various management actions, determine the research potential of the extant collections and existing archeological data base, and finally, to enhance the scientific understanding of human occupation in Canyonlands. These goals, we envision, will be accomplished through collecting, describing and presenting the basic site data, using these data to evaluate present and previous research questions, interpreting the data relative to extant knowledge, and identifying potentially profitable areas of future research. To this end, a research design has been developed to structure the fieldwork and analysis, and facilitate integration of the data into a regional framework.

Research designs are generally based on existing information and ideally interrelate and expand on previous research designs from an area. This is not directly possible for Canyonlands due to the incomplete nature of the existing data base. The fragmentary character of existing information results from the paucity of systematic, large-scale surveys, excavations and intensive analyses, and projects conducted in recent years by modern standards. For example, the excavations in Beef Basin

south of the park occurred over 30 years ago (Rudy 1955), and the results of the only other major excavation in the area—the Midwest Archeological Center's 1983-1985 work in Island-in-the-Sky—are not yet available. Sharrock's (1966) survey in the Needles District is more than 20 years old and the site and artifact data from recent National Park Service surveys in the Needles District are often poorly described (Osborn et al. 1986) or inadequately interpreted (Griffin 1984). Hence, there is a comparatively poor understanding of even the basic components of human occupation in Canyonlands—for example, when the park was occupied, what cultural groups inhabited the park and whether they used it on a seasonal or year-round basis.

This research design and investigative effort are also constrained by National Park Service management needs and certain requirements of the contract. For example, the National Park Service has a mandate to provide an informative and educational experience to the average park visitor. This mandate is reflected in our contract which requires us to synthesize the diverse threads of archeological information into a coherent, if incomplete, picture of prehistoric occupation in the park. Our research effort must mesh with the needs of park personnel to the extent that the results can be used by managers and

## RESEARCH DESIGN

interpreters to explain the local archeology to the visiting public. This requirement limits the research to domains that are intrinsically interesting and understandable to the average park visitor, and aspects of prehistory that can be easily interpreted using physical remains such as artifacts, structures and rock art supplemented with displays and illustrations.

A second constraint is that the survey areas are primarily determined by National Park Service management needs (e.g., areas of potential impact or development) with a lesser emphasis on research considerations. Because these survey tracts represent only a small percentage of the park area and are not necessarily a representative sample of total park environment, no statistically valid models of prehistoric occupation can be developed for either the park or for individual districts. Rather, the results of these surveys can be used to develop hypotheses about occupation in the park that can be formally tested at some future date.

Third, the duration of the project is unknown due to uncertainty of funding. The funding for each year of this project is independent of previous funding levels, and there is no guarantee that the project will continue for the anticipated four years. Because of this uncertainty, and the possibility that the original proposal will have to be modified to suit funding levels in subsequent years, the research effort must be sufficiently directed and contained so that it can be completed at the end of any contract year.

Fourth, the project is restricted to field inventory and limited testing consisting of sectioning hearths and collecting flotation and radiocarbon samples. The types of information collected by survey are always limited in kind and amount, and in their usefulness for addressing detailed research issues. Many of the complex research issues about Canyonlands prehistory can only be addressed with excavation data.

Fifth, collection of artifacts during survey is not permitted except for highly

unusual or rare items. Therefore, artifact analyses are generally limited to basic classifications conducted in the field.

Sixth, the contract specifies that all research focus on aboriginal sites; historic archeological sites are to be recorded but not extensively analyzed or interpreted because another contractor, Western Historical Studies, Inc., is investigating the historic resources in the park.

Finally, the research design must be limited to research questions and issues that have a good possibility of being addressed using existing information and the data expected from the project. For example, detailed research questions pertaining to Paleoindian, Numic and Navajo occupations are not appropriate at this stage because there is currently little or no evidence that these cultural groups inhabited the park. In another example, because little or no work is anticipated in the Maze District, research questions concerning that area and its relation to the Needles District must be restricted to those that can be addressed using existing records and collections from the Maze and current data from the Needles.

Research questions concerning Canyonlands prehistory were formulated in four major problem domains: (1) Cultural Affiliation and Chronology, (2) Settlement Patterns, (3) Environmental Adaptation, and (4) Cultural Interaction. Although a myriad of other domains could be proposed for a research program in Canyonlands, we believe that restricting the investigations to these four domains will maximize the research effort under the scope, focus and limitations of this contract. These are the domains that can be addressed given the constraints noted above, the time available and the data expected from the project.

In any ongoing investigative effort, research issues change as knowledge increases and the project matures. Hence, the research design presented below will be expanded and modified to include new data and research issues if the project continues into subsequent years. Though this

research design is primarily oriented toward the first year's work in the Needles District, much of it applies to the park-wide situation.

The remainder of this chapter discusses the research issues and presents specific questions proposed for the first year of the project. At the specific request of the National Park Service, relevant background information has also been included in the form of both discussion and charts (Table 1, Figure 11). These basic overview data are required by the National Park Service because this report will be used by interpretive personnel in addition to our professional peers. It should be noted that Table 1 is a *simplified* list of the major attributes correlating with various cultural groups and temporal periods. Sites do not necessarily have to have *all* of the listed characteristics to be assigned to a particular affiliation and time period, and other more technical information is considered when the situation warrants it.

## Domain 1: Cultural Affiliation and Chronology

**Research Issue 1: What is the extent of prehistoric human use of the park? What cultural groups used the area? When were they present?**

While this issue seems simplistic, a good culture historical sequence is a prerequisite to addressing more sophisticated research questions; as noted above, such a sequence is lacking for Canyonlands. Archeologists recognize five major periods of occupation in southeastern Utah: Paleoindian, Archaic, Late Prehistoric, Protohistoric and Historic. Although these periods often connote a particular lifeway or cultural affiliation, they are used here in a strictly chronological sense to refer to blocks of time. Lifeway and affiliation are treated separately under each chronological period. The first four periods are the subject of this research design. As noted above, the historic period is being researched by another contractor and is not a focus of

this project, even though historic period archaeological sites are to be recorded when encountered. Due to the nature of archaeological research, the dates of the various periods are approximate and there is some overlap.

### Paleoindian Period (10,000 - 6,000 B.C.)

The earliest people that might have used the park are the Paleoindians or big game hunters (Table 1). These people lived in small, nomadic groups and manufactured sophisticated tools for hunting and processing megafauna. Though their diet apparently emphasized large game animals, they also used plant resources and smaller animal species.

Archeologists recognize three cultural complexes within the Paleoindian period, Llano (9500-9000 B.C.), Folsom (9000-7000 B.C.) and Plano (7000-6000 B.C.), primarily on the basis of distinctive projectile point styles and technology, and the primary game animal hunted. Llano, the earliest of the three complexes, is distinguished by Clovis points and is usually associated with hunting the now-extinct mammoth. The Folsom complex is recognized by the presence of Folsom points which are often associated with large forms of now-extinct bison. Plano, the final complex in the Paleoindian period, is identified by a wider variety of unfluted lanceolate points typically associated with bison, pronghorn and other early postglacial modern fauna.

Although no Paleoindian materials have been found in the park to date, isolated Paleoindian points have been found in various parts of southeastern Utah (e.g., Black et al. 1982; Copeland and Fike 1988; Geib and Bremer 1988; Hicks 1976; Hunt 1953; Nickens 1982), and two Paleoindian camps—the Lime Ridge and Montgomery sites—were recently excavated in the general area (Davis 1985; Davis and Brown 1986). The discovery of dung, bones and hair from bison and mammoth at Cowboy and Jim Walters caves (Jennings 1980) establishes that large mammal species commonly hunted by the Paleoindians were

Table 1. Temporally sensitive artifacts, features and architecture used to place sites in a temporal and cultural framework.

Time Period	Cultural Affiliation	Pottery	Projectile Points	Perishable Artifacts	Features	Architecture	Rock Art	Groundstone
Paleoindian 10,000-6,000 B.C.	Paleoindian	None	Clovis, Folsom, Plano (various unfuted lanceolate points)			None	Mammoth/mastodon motifs	
Early Archaic 7000-4200 B.C.	Archaic	None	Pinto, Humbolt Concave Base, Northern Side-notched, Elko Series	Open-twined sandals, plain-weave sandals, one-rod-and-bundle basketry, atlatl	Isolated slab-lined and unlined hearths	None known		One-hand manos, basin metates
Middle Archaic 4200-1700 B.C.	Archaic	None	Rocker Side-notched, Hawken Side-notched, Sudden Side-notched, San Rafael Side-notched, McKean Complex, Elko Series	Open-twined sandals, plain-weave sandals, one-rod-and-bundle basketry, split-twig figurines, atlatl	Isolated slab-lined and unlined hearths	None known	Barrier Canyon	One-hand manos, basin metates
Late Archaic 1700 B.C.-A.D. 500	Archaic	None	Gypsum (or Gatecliff), Elko Series	Open-twined sandals, plain-weave sandals, one-rod-and-bundle basketry, split-twig figurines, atlatl	Isolated slab-lined and unlined hearths	Shallow pithouses	Barrier Canyon Style, Glen Canyon Linear Style, Chihuahuan Polychrome Style, Great Basin Abstract Style	One-hand manos, basin metates
Basketmaker II 200 B.C.-A.D. 500	Anasazi	None	Elko Series, large corner-notched points	Square-toe sandals, two-rod-and-bundle basketry, atlatl	Circular, slab-lined storage pits, jar-shaped cists	Shallow pithouses or surface dwellings	San Juan Anthropomorphic Style	One-hand manos, basin metates
Basketmaker III A.D. 500-700	Anasazi	Chapin Gray, Chapin Black-on-white, Abajo Red-on-orange	Elko Series, large corner-notched points, Rose Springs/Rosegate, Style A	Two-rod-and-bundle basketry, bow and arrow		Deep pithouses with antechambers and jacal storage rooms	Anasazi Style	Two-hand manos, trough metates
Pueblo I A.D. 700-900	Anasazi	Chapin Gray, Moccasin Gray, Chapin Black-on-white, Piedra Black-on-white, Abajo Red-on-orange, Bluff Black-on-red, Deadmans Black-on-red	Rose Springs/Rosegate, Style A, Style B, Parowan Basal-notched, large stemmed points	Various types of basketry and other perishable artifacts		Above-ground masonry and jacal rooms and storage structures, protokivas	Anasazi Style	Two-hand manos, trough metates, slab metates
Pueblo II A.D. 900-1100	Anasazi	Mancos Gray, Mancos Corrugated, Cortez Black-on-white, Mancos Black-on-white	Style A, Style B, Parowan Basal-notched, Bull Creek, Style C	Various types of basketry and other perishable artifacts	Mealing bins	Above-ground masonry rooms, kivas, granaries, towers	Anasazi Style Hands Motif Faces Motif (?)	Two-hand manos, slab metates
Pueblo III A.D. 1100-1300	Anasazi	Dolores Corrugated, Mesa Verde Corrugated, McElmo Black-on-white, Mesa Verde Black-on-white	Style B, Parowan Basal-notched, Bull Creek, Style C	Various types of basketry and other perishable artifacts	Mealing bins	Above-ground masonry rooms, kivas, granaries, towers	Anasazi Style Hands Motif Faces Motif (?)	Two-hand manos, slab metates
A.D. 700-1250	San Rafael Fremont	Emery Gray, Ivie Creek Black-on-white	Rose Spring/Rosegate, Parowan Basal-notched, Bull Creek, Nawitha Side-notched, Cottonwood Triangular	Half-rod-and-bundle basketry, leather moccasins		Pithouses, surface rooms of adobe and stone, granaries	Southern San Rafael Fremont Style	Loaf-shaped manos, Utah Style metates
A.D. 1300-1900	Ute/Paiute	Brownware	Desert Side-notched, Cottonwood Triangular			Wickiups, sweat lodges	Modern	
A.D. 1300-1900	Navajo	Piñon Gray	Desert Side-notched			Hogans, sweat lodges, ramadas	Modern	




Approximate Date	Cultural Affiliation	Figure Types	Description and Name of Style	Discussion
2000 B.C.-A.D. 1	Archaic		<b>Barrier Canyon Anthropomorphic Style</b>  The dominant motif is a dark, tapering, static anthropomorphic form. Figures are ghostly in appearance and usually lack appendages and facial features. Heads on the painted figures vary from small and round with long necks to large, round and flat topped. Elaborate torso decorations of naturalistic and geometric designs are common. Many anthropomorphs have small zoomorphic figures around their heads or larger dogs at their sides. Figures are generally painted, usually in a dark red pigment with highlights in buff-colored pigment. A few pecked specimens are also known.	This style was first observed in Barrier Canyon (Horseshoe Canyon) which is now part of Canyonlands National Park. It is found in central and southern Utah and much of the northern Colorado Plateau. Originally believed to be a Fremont style, evaluation by Schaafsma (1971) has resulted in the assignment of this style to a named type—Barrier Canyon—and to Archaic hunters and gatherers.
700 B.C.(?)–A.D. 100	Archaic		<b>Glen Canyon Linear Style</b>  This petroglyph style is characterized by deeply indented rectilinear forms that are sometimes filled with horizontal or vertical hatching. Human and mountain sheep forms are most common. Both figure types have large rectilinear bodies that are disproportionate with their heads, legs and arms. Human figures often have "rabbit-ear" head decorations. Associated elements include long, wavy lines, animal tracks and simple plant motifs.	This style was first observed in Glen Canyon and until recently was believed to be confined to that area. However, it has been recorded in Capitol Reef, Canyonlands and near Vernal, Utah. It has also been recorded along the Little Colorado River in Arizona and Quail Creek near St. George, Utah.
700-300 B.C.	Archaic		<b>Chihuahuan Polychrome Abstract Style</b>  This painted style is characterized by multicolored designs of short, parallel lines and zigzags. The parallel lines are usually close together and are freestanding or joined to form rakes. Zigzags occur singly, in pairs or crossed to create diamond chains and nets. These painted designs occur primarily in caves and rockshelters.	This style primarily occurs in southern New Mexico in the Chihuahuan Desert which extends into parts of Texas and Mexico. However, the style has also been identified in all parts of southern Utah.

Figure 11. Synopsis of known and suspected rock art styles in Canyonlands National Park. Drawings and dates from Heizer and Baumhoff (1962), Noxon and Marcus (1985) and Schaafsma (1971, 1980).




Approximate Date	Cultural Affiliation	Figure Types	Description and Name of Style	Discussion
1000 B.C.(?)-A.D. 500(?)	Archaic		<b>Great Basin Abstract Style</b>  This petroglyph style consists of zig-zags, circles, triangles, wavy lines, agglomerations of circles, meandering and curving lines, concentric circles, sun disks, stars and snakes. Petroglyphs of this style most often occur on boulders or outcroppings, usually filling most of the rock facet on which they occur. This style often co-occurs with the Great Basin Representational Style.	This style is apparently rare outside of the Great Basin, but there is sufficient evidence to assign some southwestern rock art sites to this style (Noxon and Marcus 1985). Its extent in the Southwest is not currently known. This style is supposedly present at the Lower Jump Site in the Needles District.
A.D. 1-500(?)	Archaic (?)		<b>Great Basin Representational Style</b>  This style consists of well-executed petroglyphs and pictographs of bighorn sheep and other quadrupeds, as well as horned and other human forms. This style is not well defined but frequently occurs with the Great Basin Abstract Style.	Schaafsma has not identified this style in the Southwest, but Noxon and Marcus (1985) feel it is present at the Lower Jump site in the Needles District. This style occurs primarily in Nevada where it is believed to continue until A.D. 500 (Heizer and Baumhoff 1962).
A.D. 1-400	Basketmaker II		<b>San Juan Anthropomorphic Style</b>  The primary motif of this style is the nearly life-size, broad-shouldered human figure that is sometimes elaborately decorated. These forms are always depicted in a static, front-facing position and display a variety of headgear, earrings, necklaces and sashes. Hands with splayed fingers dangle from arms attached to the top of a tapered torso. Legs jut downward from the bottom of the torso and end with splayed feet. Figures are primarily pecked, but painted panels also occur.	This style is attributed to the earliest horticultural group in the Four Corners area, the Basketmaker. It is limited to the southernmost portion of Utah, northern Arizona and a small section of southwestern Colorado. This style has not been recorded in Canyonlands National Park although Steve Manning (personal communication) has found San Juan Anthropomorphic Style figures in the nearby Indian Creek area.

Figure 11. Synopsis of known and suspected rock art styles in Canyonlands National Park (continued).



Approximate Date	Cultural Affiliation	Figure Types	Description and Name of Style	Discussion
A.D. 1050(?) - 1150(?)	Anasazi (?)		<b>Faces Motif Anthropomorphic Style</b>  Anthropomorphs of this style are typically front-facing, multicolored, nearly life-size human forms. The body is triangular with broad, square shoulders and a tapering torso that often ends with a sash or belt line. The figures lack arms and legs. Bucket-shaped heads end with heavy, large rounded chins. Slitlike or oval eyes and the absence of a mouth give the appearance of a mask. The hair appears to end in large shoulder bobs. The rock surface beneath these motifs was abraded prior to being painted.	This style is found in the Needles District of Canyonlands, but its distribution is unknown. There is some question as to the origin of this style. Schaafsma (1971) notes that the figures are similar to Fremont anthropomorphs although there are some distinct differences. Noxon and Marcus (1985) suggest these motifs are Anasazi because they are consistently associated with Anasazi cultural features. However, they bear a striking resemblance to Fremont unfired clay figurines.
A.D. 900(?) - 1200(?)	Anasazi		<b>Anasazi Rock Art Style</b>  A definite Anasazi rock art style for this part of Utah has yet to be defined. However, Anasazi rock art tends to be more lifelike than previous styles and includes anthropomorphs engaged in a variety of everyday activities. Small, triangular-bodied figures with turned out feet and arms angled out from pointed shoulders are common as are stick figures. Flute players and hunt scenes are common elements. Designs and figures may be painted or pecked. Handprints executed in a variety of pigments are also common.	A Canyonlands Anasazi Style has been suggested by Noxon and Marcus (1985), but more research is needed to determine its age and the stylistic elements associated with the proposed style. Many of the elements attributed to this style occur well outside of the Canyonlands area and it may not be appropriate to include them in a Canyonlands Anasazi style.

Figure 11. Synopsis of known and suspected rock art styles in Canyonlands National Park (continued).



Approximate Date	Cultural Affiliation	Figure Types	Description and Name of Style	Discussion
A.D. 700(?)–1200(?)	Fremont		<p>Southern San Rafael Fremont Style</p> <p>The dominant Fremont figure is a large, front-facing, broad-shouldered human form with horns or feather headdresses. Arms dangle from the trapezoidal torso and usually end in spayed hands. Feet are typically turned out to the sides. The figures appear to be wearing kilts and sashes. Another anthropomorphic style includes shield bearers and shield figures. Mountain sheep are an important element of this style. Both painted and pecked motifs occur.</p>	<p>This style occurs throughout the southeastern section of Utah and into the southwestern portion of Colorado along the Colorado River. Some researchers believe that the occurrence of this style south of the river, especially in Canyonlands National Park, is due to wholesale borrowing of the style by the Anasazi.</p>
A.D. 1300(?)–1900	Ute, Paiute or Navajo		<p>Modern</p> <p>A common protohistoric/historic motif is the mounted horseman often depicted with a bow and arrow in pursuit of wild game.</p>	<p>One mounted horseman motif has been recorded in the Maze District (Hogan et al. 1975). Four equestrian or equine scenes have been reported in the Needles District (Noxon and Marcus 1985).</p>

Figure 11. Synopsis of known and suspected rock art styles in Canyonlands National Park (continued).



present in the Canyonlands vicinity. These caves are located near the Horseshoe Canyon Detached Unit of the park on the west side of the Colorado River. Finally, a possible proboscidian petroglyph near Moab (Noxon and Marcus 1985:29; Pierson 1980:Fig. 7) suggests not only that suitable megafauna were present, but that humans were aware of their presence. In summary, it appears that megafauna were in the general Canyonlands area at the end of the Pleistocene; the presence of fluted and other Paleoindian points indicates some use of the general area by these early peoples. However, only additional research will demonstrate whether the Paleoindians actually inhabited the park.

At this point in our knowledge of Canyonlands prehistory, the only relevant research questions concerning the Paleoindians are (1) was the environment in Canyonlands conducive to supporting the types of resources the Paleoindians utilized and (2) did the Paleoindians utilize Canyonlands National Park? The former question is more within the scope of the Quaternary research project being conducted by Northern Arizona University than the scope of our effort, but the results of the two studies will be synthesized in the final project report so that both questions may be addressed.

#### Archaic Period (7000 B.C. - A.D. 500)

As the prehistoric climate changed at the end of the Pleistocene, and the large mammals were no longer available as a reliable food source, the Paleoindian lifeway gave way to the more economically broad-based Archaic lifestyle. This period was characterized by a hunting and gathering economy oriented towards the exploitation of a wider range of seasonally available plant and animal species (Jennings 1978). Many archaeologists recognize three general periods—Early, Middle and Late—within the Archaic era on northern Colorado Plateau (Table 1). We assign the following dates to these periods, Early, 7000-4200 B.C.; Middle, 4200-1700 B.C.; and Late

1700 B.C.-A.D. 500 basically following Holmer (1978:78) and Tipps (1988:40) except that the Early Archaic is extended to 7000 B.C. based on the date of 8830 ± 160 years: 6880 B.C. recently obtained from Archaic deposits at Dust Devil Cave (Ambler 1984).

We use A.D. 500 as a "termination" date for the Archaic period because we are including the early horticulturists—be they Basketmaker II or something else—within the Archaic period. This is not to deny that the early horticulturists differ from the "pure" hunter-gatherers, but to recognize the limits of the data expected from this survey project; in most cases, it is simply not possible to separate the two on the basis of survey data from open sites. As Jennings notes:

The difference between Basketmaker II and the preceding Archaic is not in the basic inventory of objects—woven sandals, basketry, cloth of several types, wooden scoops or trowels, clubs and as-sorted bone and chipped stone tools, string aprons, cordage of all kinds, fur blankets and skins, atlatls, darts, gaming pieces or dice, bone whistles, crude figurines—but in the addition of new traits. These are horticulture (corn and squash) and a unique style of architecture [1974:302].

Evidence for horticulture may not be available on the basis of survey data and architecture may not be visible or present on all Basketmaker II sites.

Furthermore, there is confusion surrounding the cultural affiliation of the early horticulturists and what exactly constitutes Basketmaker II. As originally conceived, Basketmaker II refers to a lifestyle that is transitional between the Archaic hunter-gatherers and the more settled

agricultural Anasazi. It is characterized by an atlatl technology, partial dependence on cultigens in addition to wild plant foods and game, and a lack of fired pottery. A similar lifestyle and technology occurred about the same time in central Utah, but researchers have been uncertain whether to term it Basketmaker II.

As a consequence, early sites in the Four Corners area that contain atlatl technology and evidence of partial dependence on cultigens but lack pottery are generally ascribed to Basketmaker II, whereas similar sites outside of the geographical area commonly associated with the Anasazi (in the Fremont "area," for example) are termed Late or Terminal Archaic. These somewhat arbitrary classifications are founded in the belief that there is cultural continuity between Basketmaker II and Basketmaker III, and therefore, because Basketmaker II is part of the Anasazi sequence, it does not apply in areas that were not inhabited by the Anasazi during subsequent periods. Superficially, this is no more than a semantic problem, but there are differences in material culture found in early horticultural sites in the Four Corners area and early horticultural sites in central Utah indicating that there could be differences in the cultural affiliation. Canyonlands is situated midway between these two areas and provides an excellent opportunity to research this issue.

Because we recognize that (1) sites representing the hunting and gathering lifeway will seldom be distinguishable from early horticultural sites on the basis of the survey data from the park, and (2) the cultural affiliation of the early horticultural sites outside the Four Corners is still a matter of debate, our approach is two-fold. First, we extend the Late Archaic to A.D. 500, and include the early horticultural sites in this period. Second, for those sites with unequivocal Basketmaker II traits, such as San Juan Anthropomorphic Style rock art, two rod-and bundle basketry and square-toe sandals, etc., we retain the Basketmaker II designation to refer to

cultural affiliation within the Late Archaic period. This approach can be modified in subsequent years if the data permits, but is presently considered adequate for handling the types of sites and data expected from this project.

Most of the excavated evidence of Archaic peoples in the immediate Canyonlands area comes from Cowboy and Jim Walters caves located just west of the Maze District (Jennings 1980). Excavations at these two sites revealed three components spanning the Early, Middle and Late Archaic periods. Archaic people apparently used these caves during the summer season while they were in the area harvesting various plant species. Somewhat farther afield, Archaic deposits have also been excavated at Dust Devil and Sand Dune caves near Navajo Mountain (Ambler 1984; Lindsay et al. 1968) and at Captains Alcove in Glen Canyon National Recreation Area (Tipps 1983).

Although excavated Archaic sites within the park are nonexistent at this writing, Archaic period sites are known within the park. Preliminary fieldwork at Downwash Ruin in the Maze has documented Archaic occupation beginning as early as 1230 B.C. (Agenbroad 1986b; Brown 1987), whereas testing at the White Crack Site (42SA17597) in Island-in-the-Sky documents Late Archaic occupation at approximately 1000 B.C. (Adrienne Anderson, personal communication 1988).

Evidence of Archaic occupation in the Needles District is currently limited to Archaic rock art styles and some Pinto-type points in the Cave Spring area of Squaw Flats (Anderson 1978). The predominant Archaic rock art styles found in the park are Barrier Canyon, which Schaafsma (1988) dates between 2000 B.C. and A.D. 1, and Glen Canyon Linear which was first defined as Glen Canyon Style 5 (Turner 1963) south of Canyonlands (Figure 11). The Barrier Canyon Style is found through most of eastern Utah including Canyonlands National Park; its distribution may suggest that the local Archaic culture was

participating in a widespread cultural pattern. Other Archaic rock art styles reportedly present in the Needles District include the Great Basin Rectilinear and Curvilinear Abstract styles and the Great Basin Representational Style (Noxon and Marcus 1985; Figure 11).

Other types of Archaic sites are abundantly present in areas surrounding the Needles District, including the Maze District (Lucius 1976), the Orange Cliffs area west of the Maze (Christensen 1983), Lisbon Valley northeast of the Needles (Black et al. 1982), Arches National Park (Berry 1975) and the area around Moab (Hunt and Tanner 1960). Thus, the paucity of other types of Archaic sites in the Needles District is probably the result of low site visibility or previous researchers' biases rather than an actual lack. Because the subsistence base of Archaic groups involved the use of seasonally available resources, Archaic sites are typically short-term use areas or camps, the material remains of which are lithic scatters with occasional hearths and groundstone tools. Early researchers conducting surveys in the park may have been either reluctant to record such lithic scatters or assumed that they were the result of short-term Anasazi use (cf. Sharrock 1966).

Currently available evidence establishes that Archaic people inhabited the park and were at least present in the Needles. Most likely, Archaic camps will be found in the Needles District upon more detailed scrutiny. If found, the cultural affiliation of these sites will be of great interest because Canyonlands is located in between areas containing the Desert Archaic (Jennings 1978) and the Oshara Tradition (Irwin-Williams 1973) and is only slightly north of the area defined for the Desha Complex (Lindsay et al. 1968). Schroedl (1976) believes that the Archaic on the northern Colorado Plateau differs from the Desert Archaic and Oshara Tradition, but subsumes the Desha Complex into an as yet undefined Archaic tradition on the northern Colorado Plateau.

Specific research questions for the Archaic period are as follows: (1) did Archaic people reside in the Needles District of Canyonlands and, if so, to what extent, (2) during what time period(s) were they present, (3) does the occupation follow the chronological sequence developed by Schroedl (1976) for the northern Colorado Plateau, (4) what is the nature of the local Archaic occupation and is it a manifestation of the Oshara Complex, (cf. Irwin-Williams 1973), the Desert Archaic (cf. Jennings 1978), the Desha Complex (cf. Lindsay et al. 1968) or some other as yet undefined tradition, (5) does cultural affinity change through time, and (6) are there diagnostic artifacts and features—other than those commonly used (see Chapter 4)—that can be used to identify the various Archaic periods, particularly the Late Archaic?

A limited number of "Basketmaker II" sites have been reported in Davis and Lavender canyons of the Needles District (Griffin 1984; Osborn et al. 1986), but there is some uncertainty about this cultural and temporal ascription because all sites with slab-lined features were indiscriminately categorized as Basketmaker. A cursory review of the data presented by both Griffin (1984) and Osborn et al. (1986) reveals that some of their "unknown" sites could be Basketmaker, but a reevaluation of their data is probably in order. Possible Basketmaker II sites have also been identified in both the Maze District (Lucius 1976) and in Island-in-the-Sky (Adrienne Anderson, personal communication 1987). Cultural materials from Cowboy Cave—located just west of the Maze—that date between approximately A.D. 60 and 455 have also been considered Basketmaker II (Jennings 1980), though some investigators question this interpretation (Geib et al. 1986:12-13). In either case, these deposits indicate that areas of the park were inhabited by early horticulturalists, but whether they were Basketmakers and whether they were also present in the Needles District is still uncertain.

Research questions relevant to this time period include: (1) how extensively was the park occupied by early horticulturalists, (2) is the cultural affiliation of such groups Basketmaker or something else, and (3) when did the early horticultural era end in the Canyonlands area?

### Late Prehistoric Period (A.D. 300 - 1300)

As used here, Late Prehistoric is a temporal designation that refers to the block of time between A.D. 500 and 1300. Two archeological cultures, the Anasazi and Fremont, could have inhabited the area during this time period.

Archeologists first visited the area that now includes the three districts of Canyonlands National Park in the early 1900s; numerous investigations have been undertaken since that time (see Anderson [1978] and Griffin [1984] for a summary of this previous work). Virtually all of these previous researchers were impressed with and focused on the evidence of Anasazi occupation in the region (cf. Nickens 1982), especially the readily visible architectural sites located in alcoves.

The Anasazi tradition is characterized by an agricultural economy supplemented by wild plant and animal foods, technological innovations such as masonry structures, pottery, arrow points and water control devices, as well as population growth and increased sedentism (Table 1). Archeologists generally recognize five periods of cultural development within the prehistoric Anasazi tradition in Utah (Kidder 1927): Basketmaker II, which was discussed above, Basketmaker III and Pueblo I, II and III. The characteristics of these periods are briefly summarized in Table 1.

Previous investigators working in areas surrounding Canyonlands National Park—e.g., the Dark Canyon Plateau (Lipe 1967), Beef Basin (Rudy 1955; Thompson 1979) and the vast area between Moab and Monticello including the Indian Creek area just west of Canyonlands (Thompson 1979)—typically found little evidence of Basketmaker III, Pueblo I and early Pueblo

II; the majority of their sites were late Pueblo II/Pueblo III.

A similar pattern has been observed in the park itself. Investigations in the Maze have shown a preponderance of Pueblo II and Pueblo III sites (A.D. 700-1300). However, as an aside, one might question why Mancos Black-on-white (a Pueblo II type) was the only decorated ware of consequence recorded during the first season of survey there (Hogan et al. 1975) and Mesa Verde and McElmo Black-on-white (both Pueblo III types) were the only types of numerical significance recorded during the second season of work (Losee and Lucius 1975).

Sharrock (1966) felt that the primary occupation of the Needles District dated to late Pueblo II/Pueblo III, but acknowledged that earlier sites might also be present. Recent surveys in Lavender and Davis canyons in the Needles District (Griffin 1984; Osborn et al. 1986) shed little additional light on the ages of the sites that might be present because little attempt was made to identify the pottery except for a few laboratory identifications based on field drawings. A review of the data presented in these reports does reveal a predominantly Pueblo II/III occupation, but the claimed presence of Basketmaker III sites is somewhat questionable because it appears to be based solely on the presence of cists and various slab-lined features in alcoves which generally also contain later materials. In addition, such features commonly occur on sites of other ages. Recent excavations by the Midwest Archeological Center in Island-in-the-Sky have yielded several dates within the Basketmaker III-Pueblo I time span (Ralph Hartley, personal communication 1988), but these are hard to evaluate because the report is not yet available.

By Basketmaker III, several regional variants of Anasazi culture can be recognized based on differences in the pottery and other aspects of material culture; these branches also exhibit minor variations in settlement and subsistence systems.

Sharrock (1966:62) attributed the Anasazi sites in the Needles District to the Mesa Verde Anasazi based on the presence of "distinctive" Mesa Verde artifacts such as pottery and groundstone. The architectural style in Canyonlands diverges from that of Mesa Verde proper, however—where the building stones are typically dressed and constructed into neatly coursed walls—and more closely resembles that of the Kayenta Anasazi area. The question remains whether architectural style can be related to ethnic identity in Canyonlands.

The dearth of Anasazi sites prior to late Pueblo II led Sharrock (1966) to infer that Canyonlands was occupied by Anasazi immigrants as a result of population pressure during the Pueblo II expansion. He further suggested that because Beef Basin, Ruin Park and Canyonlands were occupied contemporaneously, "... the major thrust into Canyonlands was via Beef Basin and Ruin Park, rather than from Indian Creek to the east" (Sharrock 1966:72). Both of these hypotheses have yet to be demonstrated.

Specific questions to be asked about the Anasazi occupation of the park include the following: (1) was the park used by Basketmaker III or early Puebloan peoples and, if so, to what extent, (2) do the dates of the various periods match those of the Pecos sequence as presented in Table 1, or should they be refined for Canyonlands as they have been in many adjacent areas, (3) were different parts of the park occupied during different periods within the Anasazi sequence, (4) are the Anasazi sites affiliated with the Mesa Verde Anasazi, (5) is the late Pueblo II/Pueblo III occupation the result of in situ growth, migration or both, and (6) if the late Pueblo II/Pueblo III occupation is the result of migration, were the immigrants from Beef Basin and Ruin Park, or some other portion of the Mesa Verde domain?

The Fremont are another cultural group that has long been thought to have occupied the Canyonlands area. The Fremont are generally differentiated from

the Anasazi by their pottery, anthropomorphic clay figurines, rock art, moccasins, half-rod-and-bundle basketry and architecture (see Table 1). Though broadly perceived as horticulturalists, accumulating evidence suggests that there was a significant amount of hunting and gathering among many Fremont populations.

Canyonlands has long been thought to have been a "frontier" zone occupied by both the Anasazi and the Fremont. Fremont occupation was primarily inferred based on the presence of rock art styles believed to be of Fremont origin (i.e., Barrier Canyon, Faces Motif, shield figures, horned anthropomorphs, etc. [cf. Anderson 1978]). Rudy (1955) hypothesized that the Anasazi occupied the broad park or basin areas whereas the Fremont inhabited the canyons. A decade later, Sharrock (1966:62) questioned the actual presence of Fremont people in the Needles and Island-in-the-Sky districts of the park because he found no Fremont traits other than a few Fremont sherds and numerous petroglyph and pictograph panels with Fremont style motifs. Due to the lack of other Fremont diagnostics, he suggested that the Fremont style rock art in Canyonlands was not necessarily made by Fremont people but executed by the Anasazi who borrowed the Fremont motifs "... without significant (distinguishable) population interchange."

Rock art research has since suggested that many of the styles once believed to be Fremont were made by some other cultural group. For example, the so-called Fremont ghost figures (Barrier Canyon anthropomorphs; Figure 11) discussed by Sharrock were apparently made by Archaic peoples (Schaafsma 1971). The Faces Motif, another style originally believed to be of Fremont origin (Schaafsma 1971:50-53), is now considered Anasazi (Noxon and Marcus 1985:81). Most researchers still consider the horned and shield figures to be Fremont in style, but whether such figures in the Canyonlands area were made by the Fremont or by some other cultural group is still a matter of debate. For

example, Noxon and Marcus (1985:352) attribute All American Man, the Fremont-style walking shield figure in upper Salt Creek, to the Anasazi. Rocky Mountain Regional Archeologist Adrienne Anderson (personal communication 1988), considers it classic Fremont in style but considers its origin indeterminate. Noxon and Marcus (1985:251) further suggest a Fremont origin for the shield-bearing figure at the Nine Faces site in Horse Canyon. Rock art specialist Steve Manning (personal communication 1988) includes it with the Faces Motif style because of the identical head shape, similar body shape, and similar neck and chest ornamentation. There are classic Fremont style panels present in Indian Creek Canyon, east of the park (Steve Manning, personal communication 1988), but it is still uncertain whether they were made by Fremont people or some other cultural group that only imitated the Fremont style. The origin of Fremont style rock art in Canyonlands has been and will continue to be an important research issue.

The presence of Fremont rock art panels and Fremont pottery at 21 sites in the Maze District led Lucius (1976) to suggest that it was subject to occasional use by the Fremont. Whether Fremont use of the Maze District is contemporaneous with Anasazi use of the area is unknown and remains an important research question that can only be addressed through detailed, well controlled excavations.

In summary, current evidence of Fremont occupation in the Needles District primarily consists of rock art with Fremont motifs, suggesting that Fremont use of the area was sporadic, if it occurred at all. Griffin's (1984:442) summation that "Prehistoric sites in the Salt Creek Archeological District ... reflect the intermingling of Pueblo period Fremont and Anasazi cultures ..." revives an outdated notion and is not based on data from either of the canyons he surveyed. This conclusion was simply plagiarized from Anderson's (1978: 31-32, 42) Canyonlands overview.

There are several questions pertaining to the Fremont that need to be addressed: (1) were Fremont groups actually present in the Needles District or do the limited Fremont traits indicate influence, (2) if Fremont people actually used the Needles District, what is the temporal span of their occupation, and (3) can they be associated with the San Rafael variant which supposedly occupied the territory west of the Colorado River from Boulder to Price, Utah (cf. Marwitt 1970a)?

### Protohistoric Period (A.D. 1300 - 1850)

Native American groups believed to have inhabited southeastern Utah during the Protohistoric period include the Numic-speaking Utes and Paiutes and the Athabaskan-speaking Navajos. Archeological evidence indicates that Utes were present in southwestern Colorado and, thus, potentially southeastern Utah by A.D. 1600. Linguistic data places the Paiutes in Utah by A.D. 1200 (Jennings 1978:235), whereas the archeological evidence demonstrates their presence in southwestern Utah by A.D. 1280 (Walling et al. 1986:Appendix I). Historical references to Ute and Paiutes in the Canyonlands vicinity indicate they were present in the area no later than the late 1800s (Nickens 1982; Noxon and Marcus 1985).

Hogan et al. (1975:37) report possible Ute rock art in the Maze District and both Sharrock (1966:67) and Noxon and Marcus (1985:90-91) report several rock art panels depicting mounted horsemen in the Needles District. Although no Paiute sites have been recorded in the park to date, such sites have been reported on all sides of the park. Hunt (1953:16) reports the presence of at least a "half dozen" Paiute sites in the La Sal Mountain area east of the park, whereas Berry (1975:86, 89, 93) observed "Paiute-Shoshoni" ware, Desert Side-notched projectile points and rock art depicting mounted horsemen in Arches National Park. Farther south, Thompson (1979:125) found a Paiute site in the Indian Creek area. West of the Maze, in

Clearwater Canyon, Fairley and Geib (1986:218) discovered sherds from two Southern Numic Brown Ware vessels; one may be of Paiute origin, whereas the other "... resembles historic specimens of Ute pottery." Desert Side-notched points were found in the same area, as well as to the south at North Point (Bungart and Geib 1986:270). In Bowns Canyon, somewhat farther south, Agenbroad (cited in Geib et al. 1986:168) obtained a radiocarbon date of A.D. 1380 from a wickiup in Bechan Cave that apparently relates to Numic occupation.

The Navajo are a Southern Athabaskan people who probably entered the Southwest by the late 1500s (Bailey and Bailey 1978:6) and spread into southeastern Utah sometime after A.D. 1700 (Nickens 1982:37). Sharrock (1966:63) reports a possible Navajo hogan in Squaw Flat in the Needles District of the park, but no other evidence of Navajo occupation is presently known.

The Protohistoric period is poorly documented in all three districts of the park. Although problems of site identification and the lack of diagnostics may have contributed to this apparent lack, there does appear to be a genuine sparsity of occupation during the Protohistoric period. Research questions concerning all three of these cultural groups are (1) did they inhabit the park and (2) when were they present? If evidence of any of these peoples is found, additional research questions will be presented when the research design is updated in subsequent years.

#### Data Needs

The chronology questions presented in Research Issue 1 will be addressed through ascertaining and evaluating the type, distribution and associations of pottery, projectile points, rock art styles and masonry forms. Most pottery types and many types of projectile points have been securely dated in surrounding areas and can be used to assign dates to the Canyonlands sites. Though not as well dated,

groundstone types, rock art and masonry styles may be used for general temporal assignments. More specific chronological information can be obtained from dendro-chronological samples. Due to the scanty nature of the surface remains, many of the sites expected in Canyonlands will not be assignable to a specific cultural or temporal affiliation without investigations beyond the level of survey (cf. Anderson 1978). These sites may require limited testing to obtain radiocarbon samples and other more specific information such as temporally distinct artifacts. Investigation and reevaluation of existing data and collections from the park is another means of collecting chronological information.

Questions of cultural affiliation can be profitably addressed by identifying artifact and feature types that have known cultural affiliations. For example, if projectile points representing known traditions are found, they can be used to infer cultural affiliation during the Archaic time period. Evaluations of Archaic rock art style distribution relative to the distribution of distinctive projectile point types may provide additional information on affiliation or directions of influence.

Affiliation during the Late Prehistoric Period will be determined in a similar manner, by evaluating similarities and differences in artifactual and architectural styles. In the particular case of pottery, the formal attributes of style and technology reflect not only age, but location of manufacture. It has already been established that some of the technological characteristics of McElmo and Mesa Verde Black-on-white vessels found in Beef Basin (Rudy 1955) differ from those in other parts of the Mesa Verde region (Breternitz et al. 1974). If funding is available, ceramic specimens from the Needles District can be compared to those from Beef Basin and other areas to ascertain whether they have similar temper and paste characteristics reflecting a common location of manufacture. However, excavation data would probably be necessary to ascertain whether any similarities

are the result of migration, trade or influence.

**Research Issue 2: What is the extent of prehistoric rock art in Canyonlands National Park? What styles are present? Can these styles be used to assign cultural or temporal affiliation? Or, conversely, can other archeological information be used to refine the dating and affiliation of these styles?**

Rock art is a highly visible component of the archeological record in Canyonlands National Park. It was noted by many of the early investigators in the area and is also of great interest to the public. In addition to providing information on cultural affiliation and chronology, rock art can yield information on prehistoric lifeways.

#### Barrier Canyon Anthropomorphic Style

Barrier Canyon Style is one of the most interesting types of rock art found in the park. It is unique for its larger-than-life-size anthropomorphs with long tapering bodies and general lack of extremities (Figure 11). Facial features are restricted to large staring eyes that give these creatures a very ghostlike appearance. Some have large "bug eyes" (Schaafsma 1971). Barrier Canyon Style figures are usually executed in dark red pigment with occasional green, white and/or buff-colored highlights; buff-colored figures and pecked figures appear infrequently. Barrier Canyon Style rock art occurs throughout the park, and of course the type locale is in the Horseshoe Canyon Detached Unit of the park (Gunnerson 1969). Barrier Canyon Style rock art is also found across much of eastern Utah and extends short distances into northwestern and southwestern Colorado, and northwestern Arizona (Castleton 1978, 1979; Manning 1985; Noxon and Marcus 1985; Schaafsma 1971, 1988).

This distinctive style of anthropomorphs was originally attributed to the Fremont based on the belief that it was restricted to the San Rafael Fremont region, and because of its similarities to Fremont petroglyphs within this area. After reviewing various rock art styles,

Schaafsma (1971, 1980)—on the basis of several lines of evidence, including superposition, internal elements in the panels and the associations with other sites—determined that these figures represent a distinctive style which she termed Barrier Canyon. She attributes the Barrier Canyon Style to "... hunter-gatherers immediately preceding the Fremonters of the region" (Schaafsma 1980:61) and states that "... the Barrier Canyon Style falls late in the Archaic sequence. It may have been, in part at least, contemporaneous with the Anasazi Basketmakers to the south, and a rough tentative dating between 500 B.C. and A.D. 500 is suggested" (Schaafsma 1980:70).

Both Schroedl (1976) and Noxon and Marcus (1982, 1985) agree that the Barrier Canyon Style is not associated with either the Fremont or the Anasazi culture in Utah. However, as Schaafsma (1980) admits, the dating is still rather tentative. Some researchers consider the similarities between some of the Barrier Canyon Style anthropomorphs and the unfired clay figurines recovered in the Early Archaic assemblage at Cowboy Cave (Jennings 1980); near the Maze District as indirect evidence for a greater antiquity (Schroedl 1977, 1989). Because of this and our possible early date on the Barrier Canyon Style (see Chapter 7), Schaafsma (1988:18) has come around to this position and now suggests that a "... conservative time estimate would be circa 2000 B.C. to A.D. 1." Schroedl (1989:17) still maintains that it may date as early as 4000 B.C.

Research questions relevant to the Barrier Canyon Style rock art are (1) what is the date of the Barrier Canyon style, (2) is it associated with a regionally distinctive Archaic culture, and if so what culture, and (3) is it strictly Archaic or is it also associated with Basketmaker groups?

#### Glen Canyon Linear Style

The Glen Canyon Linear Style was first defined by Turner (1963) as Glen Canyon Style 5 in the Glen Canyon area. It



includes oval and rectilinear human and animal forms that are deeply pecked in outline and occasionally filled with vertical and/or horizontal hatching (Figure 11). The figures typically have large bodies relative to the head and appendages, and may be somewhat schematic. This style is tentatively dated between 700 B.C. and A.D. 100 and is considered an Archaic manifestation (Schaafsma 1980:109).

Glen Canyon Linear is found along the drainages of the Colorado and San Juan rivers in southeastern Utah and extends as far west as Kanab (Manning 1988:A-2), as far northwest as Capitol Reef National Park and as far north as Vernal, Utah (Adrienne Anderson, personal communication 1987). Although this style has not been found in the Needles District to date, Noxon and Marcus (1985) note its presence in Indian Creek Canyon and at Newspaper Rock State Park; because both of these areas are located just east of the Needles District, there is a good possibility that the Glen Canyon Linear Style will also be found in Canyonlands National Park. The presence of this widely distributed rock art style in the park may suggest that the park was used by a variety of Archaic populations prior to the influx of Anasazi peoples.

Research questions about the Glen Canyon Linear Style are as follows: (1) is this style present in the park, (2) is it associated with Archaic sites and, if so, from which Archaic period(s), (3) is the tentative dating correct and can it be refined, (4) does this style co-occur with the Barrier Canyon Style and, if so, what are the implications for cultural affiliation, and (5) does the distribution of this rock art style suggest that it developed in situ or does it reflect influence from a particular direction or cultural group?

### Other Early Rock Art Styles

In documenting rock art in the Needles District, Noxon and Marcus (1985) have tentatively identified the presence of three other Archaic rock art styles: Chihuahuan

Polychrome Abstract, Great Basin Abstract and Great Basin Representational (Figure 11). These styles are more fully described in Figure 11, Schaafsma (1980) and Noxon and Marcus (1985). They are believed to date between 700 and 300 B.C., 1000 B.C. and A.D. 500, and A.D. 1 and 500, respectively.

Specific research questions are as follows: (1) is Chihuahuan Polychrome, Great Basin Abstract or Great Basin Representational present in the park, (2) are the presently accepted dates correct for the Canyonlands area, (3) what cultural group is responsible for their manufacture, and (4) are sites with these styles distributed in such a way that they reflect influence from a particular direction or cultural group?

### San Juan Anthropomorphic Style

The San Juan Anthropomorphic Style is characterized by large, front-facing, anthropomorphic figures that typically have broad, rectangular to trapezoidal bodies, stiff arms and legs that point downward, intricate chest decorations, jewelry and elaborate headdresses (Figure 11). This style includes both pecked and painted figures (Schaafsma 1980).

The San Juan Anthropomorphic Style has been associated with Anasazi occupation during Basketmaker II and tentatively dated between A.D. 1 and 400 (Noxon and Marcus 1985). Based on fieldwork conducted by Steve Manning, Noxon and Marcus (1985) report many "classic" figures in Indian Creek Canyon, immediately east of the Needles District, but none are currently known from the park itself.

Research questions are as follows: (1) are San Juan Anthropomorphic Style pictographs and petroglyphs present in the park, (2) if present, are they associated with other Basketmaker II remains, (3) can the date of these distinctive figures be refined, and (4) does their distribution within the park have any implications for cultural affiliation of sites occupied by early horticulturists?

### Faces Motif Anthropomorphic Style

Another dramatic and attention-drawing rock art style that is well known by park visitors is the so-called Faces Motif. This style is characterized by front-facing, multicolored, nearly life-size anthropomorphs with bucket-shaped heads, large, heavy, rounded chins and hair that often ends in large shoulder bobs (Figure 11). They typically lack arms and legs (Noxon and Marcus 1985; Schaafsma 1971).

Rock art panels displaying these intricately painted motifs occur throughout the Needles District and one panel is known in Lathrop Canyon in Island-in-the-Sky (Castleton 1979:302-305). Included in the inventory of Faces Motif sites are the Nine Faces (42SA1486) and Eleven Faces (42SA16826) sites in Horse Canyon, the Two Faces (42SA1631) and Four Faces (42SA1629) sites in Salt Creek Canyon and the Five Faces site (42SA7736) in Davis Canyon (Castleton 1979; Griffin 1984; Noxon and Marcus 1985). Others have also been reported both in and outside of the park.

Schaafsma (1971:52) notes the similarity between these figures and the typical Fremont anthropomorphs, but hastens to point out that there are some distinctive differences. It has recently been suggested that the Faces Motif is Anasazi in origin because it is consistently associated with late Pueblo II/Pueblo III, Mesa Verde Anasazi sites in the Needles District (e.g., Noxon and Marcus 1982, 1985) and seems to be concentrated on the south side of the Colorado River where the Anasazi utilization of the park is most substantial. However, the striking similarity of these paintings to Fremont figurines cannot be denied (cf. Tuohy 1986:Fig. 9).

Specific research questions concerning the Faces Motif are as follows: (1) were the artists who made these paintings Fremont or Anasazi, (2) if Anasazi, do they represent an Anasazi adaptation of a Fremont style, and (3) do the Faces Motif panels occur exclusively with late Pueblo II/Pueblo III Anasazi remains?

### Canyonlands Anasazi Style

The recently defined Canyonlands Anasazi Style (Noxon and Marcus 1985) refers to a diverse body of pictograph and petroglyph panels believed to be of Anasazi origin. The style is described as "... heavily influenced by earlier and contemporary (sic) rock art styles including the Archaic, Basketmaker, and Fremont" (Noxon and Marcus 1985:85). The style includes sticklike anthropomorphs depicting scenes from daily life, five varieties of handprints, blown spray dots, shield figures and geometric designs such as sawtooths and bands (Figure 11). By definition, the type occurs in Canyonlands National Park.

We see several problems with the Canyonlands Anasazi style. First, many of the elements attributed to this style occur well outside of the Canyonlands area and "Canyonlands" may not be an appropriate name. Second, it has not been shown that all of the elements are Anasazi in origin or that they date to the same time period. Expanding on the first two problems, Noxon and Marcus do not present any evidence that the various identified elements constitute a discrete style—that is, that the elements consistently co-occur and have the same geographical range. This is not to deny that they do, only to point out that these issues do not appear to have been adequately researched and addressed in the report.

Because of these problems, a number of specific questions can be posed pertaining to the Canyonlands Anasazi Style: (1) is it a discrete, recognizable style or simply a loose grouping of figures that are only related in the sense that they have been found together on several sites, (2) can the various elements comprising the so-called Canyonlands Anasazi Style be subdivided into more specific styles that can be associated with particular cultural groups, time periods, and/or geographical areas, and if so, what are they?

### Southern San Rafael Fremont Style

The Southern San Rafael Fremont style includes both pictograph and petroglyph elements. It is characterized by large, front-facing anthropomorphs with trapezoidal to rectilinear bodies, broad shoulders and elaborate head and chest decorations (Figure 11). This rock art style is currently dated between A.D. 700 and 1200 and generally attributed to the Fremont (cf. Schaafsma 1971). As previously discussed, there is some disagreement regarding the cultural affiliation of the various reputed Southern San Rafael Fremont style rock art panels in the Needles, although some "true" Fremont panels are reportedly present just east of the park.

Research questions concerning the San Rafael Fremont Style are as follows: (1) is this style present in the Needles and, if so, what is its distribution and (2) are San Rafael Fremont Style figures in Canyonlands Fremont in origin or the result of Anasazi imitation of Fremont motifs?

### Data Needs

Questions outlined in this research issue can only be addressed through the detailed examination and study of photographs, drawings and descriptions of the rock art panels. Studies of associated artifacts and features as well as superpositioning of the various styles can be used to refine the temporal and cultural affiliations of the rock art styles; associations of various figure types can be examined to ascertain the validity of the newly proposed Canyonlands Anasazi style. Plotting the spatial distribution of each style could be used as one means of evaluating directions of influence and cultural affiliation. More direct dating information can be obtained by testing deposits and features that appear to be associated with the rock art panels. The possibility also exists of directly dating the Barrier Canyon rock art and other pictograph styles through linear acceleration carbon-14 dating of pigment

obtained from spalled panels. However, this technique is dependent on the presence of organic matter in the pigment samples.

### Domain 2: Settlement Patterns

**Research Issue 3: How did the prehistoric inhabitants of Canyonlands distribute themselves across the area? What are the settlement patterns typifying each cultural group and how do they differ?**

In broad outline, settlement patterns refers to the way people situate themselves across the land. Settlement patterns are influenced by the location of critical natural resources, economy, level of technology and social factors such as religion, ideology and political and social organization. These patterns of use and occupation within the park are the topic of our second research issue. Archeologically, these patterns are reflected by the density and distribution of the various site types, as well as by the types and durations of the activities they represent. Settlement patterns are best studied within the culture historical framework outlined in Domain 1 because settlement patterns vary through time and between cultural groups. The success with which settlement patterns may be identified is therefore dependent on the number of sites which can be classified to age and cultural affiliation as discussed in Domain 1.

Addressing this issue further requires that the types of sites be identified. Site typology is a complex issue, and one that becomes more difficult when classifications must be made on the basis of surface evidence collected in the context of survey. Sharrock (1966:64-67), for example, distinguishes eight site types in the Needles District. Some describe the cultural remains comprising the site (e.g., petroglyph/pictograph sites); others describe the physical setting (e.g., rockshelters) and still others attempt to interpret site function (e.g., storage sites, transient camps). Some categories provide a combination of two types of data such as setting and function (e.g., alcove camp). These groups are not

consistent, nor mutually exclusive, and are not conducive to studying settlement patterns and how they changed through time.

Recognizing the problems with such an approach and the need for a typology that can incorporate previously recorded sites for which only sketchy information is available, we follow the lead of Tipps (1984; Tipps and Schroedl 1988) in distinguishing between descriptive and functional site types without a priori assumptions that categories within each group are directly correlated. Descriptive site types are defined on the basis of the site setting and extant cultural remains, and are intended to convey a general understanding of the physical remains present. Unlike functional site types, they are not subject to theoretical biases or the orientation of the researcher; they also provide an easy means of incorporating and comparing data collected by other projects since they are not subjective but instead based on basic archeological data which all researchers presumably collect. They are especially useful because they provide a common ground for discussing site typology.

Though more subjective, functional site types are more useful for interpretive purposes. For this project, functional site types will be derived on the basis of the basic descriptive data (site setting and the cultural remains observed), and assessments of the length and intensity of occupation, the types and diversity of activities represented, and the potential for buried cultural remains. Because none of these variables can be directly observed, particularly in the context of survey, they must be estimated from existing archeological remains and are therefore more subjective.

For the first year of this multiyear project, site function will be determined cautiously using only three categories, limited activity sites, field camps and habitations. The reason for this is two-fold. First, the comparative data from the general project area is quite limited and data from a single season of survey may not produce examples of the full range of site

types actually present. Second, and more important, we recognize that there are practical difficulties in separating sites into too many functional categories solely on the basis of survey data. Sites may be partially buried or eroded, and collectors may have removed certain types of artifacts. Although we are taking a conservative approach to assigning site function during this initial year of research, the number of functional types can be expanded in future years if the types of data needed to categorize the sites prove to be available.

The succeeding paragraphs summarize what is currently known about the settlement patterns for the Archaic, Basketmaker II, Anasazi and Fremont peoples and pose questions relative to each for the Needles District. With the exception of the Anasazi, these summaries are primarily based on data from surrounding areas because little is known of these groups within the park. No discussion will be made of other cultural groups that might have inhabited the park (i.e., Paleoindian, Ute, Paiute and Navajo) due to the lack of information currently available.

If sufficient information is available to characterize settlement patterns for more than one group, they will be compared to identify similarities and changes through time. Data derived from this domain will also be used to evaluate adaptive strategies and environmental interaction in the succeeding domain.

### Archaic and Basketmaker II Settlement Patterns

Archaic peoples in southeastern Utah are thought to have followed an annual seasonal round in response to resource availability, congregating at central base camps when resources were reliable and abundant. Small groups of people periodically left this central residence to search for food and conduct other specialized tasks (e.g., lithic reduction, lithic procurement, etc.), frequently establishing short-term camps and limited activity sites. Archaic sites are frequently found in shelters or

overhangs in areas where plant foods and other resources would have been available (Jennings 1978; Lucius 1976).

Basketmaker II peoples were somewhat less mobile and are noted for their frequent use of caves. On the Red Rock Plateau, south of the park, Lipe (1970:98-103) identifies three main types of sites, habitations (with burials), storage sites and camps. The latter "... do not appear to have been connected with farming. . . ." and may "... reflect the gathering and grinding of wild seeds, perhaps of the Indian rice grass or Indian millet. . . ." (Lipe 1970:99). For the Red Rock Plateau area, Lipe (1970:94) argues that Basketmaker II sites are clustered in environmentally favorable areas.

Archaic and Basketmaker II sites currently known in or immediately adjacent to the park are basically limited to the temporary camps and limited activity sites identified in the Maze (Hogan et al. 1975; Losee and Lucius 1975; Lucius 1976), as well as three more substantial, albeit seasonal base camps, Cowboy and Walters caves (Jennings 1980) and Downwash Ruin (Brown 1987). Substantial seasonal base camps are not known in the Needles District but will probably be found upon further investigation.

Research questions relevant to Archaic and Basketmaker II settlement patterns are as follows: (1) what is the density and distribution of Archaic and Basketmaker II sites, (2) are Archaic or Basketmaker II sites found in clusters, (3) what types of sites characterize these two groups and how do they compare with those identified by researchers working in adjacent areas, (4) what types of activities are represented, (5) do the sites reflect temporary or extended use or both, (6) was occupation within the park seasonal or year-round, (7) do Archaic sites reflect the commonly accepted model of seasonal habitation, and (8) how does the Basketmaker II settlement pattern differ?

### Anasazi Settlement Patterns

In contrast to the Archaic people, the Anasazi had a serious commitment to maize-bean-squash horticulture and are generally considered to have been a sedentary people. They also used wild plant and animal foods, though their dependence on these undomesticated resources, and hence the degree of sedentism, appears to have varied both locally and temporally. Though southeastern Utah literature primarily focuses on larger sites such as villages, hamlets and fieldhouses, the Anasazi also utilized limited activity sites and camps. These smaller sites have not been the subject of detailed investigation and their role in the overall settlement pattern is still poorly understood.

Despite the widespread evidence of Anasazi use of the park, there are no large habitation sites known in the Maze District (Lucius 1976) and only a few such sites recorded in the Needles District (e.g., Metzger 1983; Metzger et al. 1984; Sharrock 1966). Many of the recorded sites in both districts consist of one or two rooms or storage structures and could have been used on a seasonal basis. Another interesting observation is that there is a distinct falloff in the frequency of Anasazi sites in the lower reaches of Salt Creek. This may be tied to a decrease in the availability of arable land or a result of survey biases during previous inventories.

In the Glen Canyon area south of the park, Lister (1959a), Long (1966) and others hypothesize that many of the late Pueblo II/early Pueblo III lowland sites were occupied on a seasonal basis by small groups from highland pueblos. These people are believed to have used the lowlands to hunt, farm and to procure wild plants, and other natural resources that were lacking in the highland zone. More recent research has extended this model, showing that the uplands were used much like the lowlands, albeit on a more ephemeral basis except in certain favorable areas (Tippis 1984). It is not clear whether the inhabitants of Canyonlands or the Needles

District were participating in a similar biseasonal residence pattern but the similarities of environment, site type and perceived settlement pattern suggest further investigation of this issue is warranted. William A. Lucius (personal communication 1985) hypothesizes that the Needles District was inhabited on a seasonal basis by Anasazi from the Beef Basin area. In contrast, Hogan et al. (1975) advance the theory that Anasazi from the Salt and Indian creek drainages of the Needles District used the Maze on a seasonal basis.

Specific research questions pertaining to Anasazi settlement patterns are as follows: (1) what is the density and distribution of Basketmaker III, Pueblo I, Pueblo II and Pueblo III sites, (2) what types of sites are present during each of these time periods, (3) do the sites from the various time periods appear to represent temporary, extended or long-term occupation, (4) did the Anasazi use the Needles District on a seasonal or year-round basis and does the observed pattern vary through time, (5) do the settlement patterns in Canyonlands follow the same general patterns as other areas of southeastern Utah, and (6) were Anasazi people from adjacent highland areas (e.g., Elk Ridge, Beef Basin, Ruin Park, etc.) using the Needles District as part of a biseasonal residence pattern similar to the one described above?

### Fremont Settlement Patterns

Within Canyonlands, the only known sites that might actually represent Fremont occupation are located in the Maze District (Lucius 1976). These known sites are rather ephemeral and led Lucius to conclude that the area was subject to only occasional use by Fremont people. No Fremont sites, with the possible exception of rock art, have been found in the Needles District. The cultural affiliation of the artists who executed the Fremont-style rock art has been discussed previously, and an important issue is whether or not Fremont sites of any type exist in the Needles District. If actual Fremont sites are found

in the Needles District, they are expected to represent ephemeral, short-term use.

Research questions pertaining to Fremont settlement patterns are: (1) what is the density and distribution of Fremont sites, (2) what types of sites are present, (3) do they represent temporary and ephemeral or extended use and (4) how do the settlement patterns compare with those observed in the "core" of the Fremont area?

### Data Needs

Four main types of data will be used to address this research issue, the age and cultural affiliation of the sites, and for each cultural group and/or time period, the types of sites present, their density and their spatial distribution. Cultural affiliation and age will be addressed as part of Domain 1. Topographic maps generated during the fieldwork and laboratory analyses will provide the density and distribution data which can be examined using various techniques of spatial analysis.

Descriptive site types will be defined on the basis of site setting (generally following Geib et al. 1986:7) and artifact and feature types observed on the surface of the sites (generally following Tipps 1984:29). Functional types will be ascertained within the theoretical framework established by Binford (1978, 1980, 1982) based on (1) the basic descriptive data, (2) information on the types and diversity of activities that took place and (3) the duration of occupation.

The types and diversity of activities that took place on each site will be inferred through analyses of the number, kind and diversity of tools and features present, with the acknowledgment that such inferences are limited when based on survey data alone. Duration of occupation is more difficult to determine, especially on the basis of survey information, but can be inferred on a general level using information such as quantity and range of cultural materials, amount of investment in constructing features, the presence of shelter and the

presence of food storage facilities. Season of occupation is another relevant piece of information, but one not readily available in the context of survey. However, it can be considered in general terms by evaluating the seasonal availability of such critical resources as water.

Finally, although more within the realm of Domain 3, environmental data, such as the relationship between site locations and various environmental characteristics, will be evaluated incidentally as necessary to elucidate settlement patterns.

### Domain 3: Environmental Adaptation

**Research Issue 4: How did the prehistoric populations interact with the local environment? What resources affected use of the park and subsequent site location? Can the environmental setting and distribution of local resources be associated with functional site types or chronological periods?**

This topic is closely related to the settlement pattern domain discussed above and refers to resource utilization, land use patterns, as well as how the environment might have influenced prehistoric settlement and subsistence patterns. These issues can be difficult to address by any direct means in the context of survey, but can be explored on a general level using artifact, feature and site type data, and by studying correlations between sites and environmental characteristics. While paleoenvironmental data are ultimately necessary to understand environmental adaptation, modern environmental variables, particularly those that remain static through time (e.g., lithic sources, aspect of alcoves etc.) can also be useful. The Quaternary research project being conducted by Northern Arizona University is expected to provide the necessary paleoenvironmental data, whereas data on the modern environment will be collected within the context of our contract as part of the site recording procedure.

#### Archaic and Basketmaker II Adaptation

The limited data available on Archaic and Basketmaker II sites in the Maze suggests that they are associated with lithic sources and environmental settings where grasses and other edible plants were available, e.g., open grassland and benchland environments within the uplands; there is currently very little evidence for Archaic utilization of the lowlands (Lucius 1976). Substantial Archaic and Basketmaker II sites in and near the Maze, as well as in other parts of southeastern Utah, also correlate with the occurrence of natural shelters (Ambler 1984; Brown 1987; Jennings 1980; Lindsay et al. 1968; Tipps 1983). Basketmaker II sites in southeastern Utah have typically been found "... in canyon environments, where spring- and flood-water farming on alluvial soils is possible and where natural shelters are abundant" (Lipe 1970:94).

Rock art panels displaying the Barrier Canyon Style also occur primarily in upland areas but away from campsites or activity areas. While their location is tied to cliff faces affording an appropriate painting surface, it is not clear if other factors determine their spatial distribution.

#### Anasazi Adaptation

Sharrock (1966:56-57) remarked about the important effect the Canyonlands terrain had on migration routes, site density, site type and locale and stated that "Canyonlands National Park presents one of the most clear-cut examples of the determination of settlement patterns by such geologic and geographic phenomena as exist in the Four Corners country." He asserted that Anasazi habitation sites in the Needles uplands are directly correlated with water and arable land, and attributed the concentration of substantial Anasazi habitation sites in Salt Creek and the adjacent Horse Canyon drainage to the presence of these two resources. This same pattern is also present in Davis and Laverder canyons (Griffin 1984; Osborn et al.

1986). Anasazi storage and habitation sites in the Maze are said to concentrate in or near these same two resources, which occur almost exclusively in the lowlands along the river (Lucius 1976).

Although neither Sharrock nor Lucius directly commented on the environmental characteristics associated with more ephemeral Anasazi sites such as camps and limited activity loci, data from several small surveys can be used to address the issue of small sites in general. In the Needles District, these sites are typically found in marginal upland areas lacking permanent water sources (Anderson 1978; Hartley 1980; Marwitt 1970b). A similar situation apparently exists in the Maze, though Hogan et al. (1975:4, 21) observed that springs were the "single most critical factor for man's presence." They also note a concentration of sites in canyons that are easily accessible, and which provide faunal resources, edible plants and lithic sources. Apparently, major sites in Island-in-the-Sky are found near springs in the uplands and water courses in the lowlands (Anderson 1978). It remains to be investigated whether other environmental variables (e.g., the availability of sheltered areas for habitation, wild plant resources, clays and siliceous stone suitable for flintknapping, view, etc.) influenced the placement of Anasazi sites.

In southeastern Utah, Basketmaker III sites usually are situated near deep, well-watered soils in alluvial valleys and drier upland settings (Lipe 1978). Pueblo I sites are unevenly distributed but do occur in the lowlands of Glen Canyon (Miller and Braternitz 1958), and in the highlands on Elk Ridge (De Bloois 1975), Alkali Ridge (Brew 1946) and the southern end of Paiute Mesa (Stein 1966). The Pueblo II era was a time of widespread dispersal of Anasazi populations and utilization of areas and environmental settings previously unoccupied. The larger sites generally occur near the best-watered soils, whereas the smaller sites lie in upland areas where farming would be marginal

under current conditions (Lipe 1978). On the Red Rock Plateau, south of the Needles District, late Pueblo II sites are concentrated in lowland canyons that are open, accessible and favorable for farming (Lipe 1970). In southeastern Utah, Pueblo III sites are generally found in the lowlands along major water courses, in well-watered upland canyons and in open locations near arable soil in the highlands (Brew 1946; Griffin 1984; Lucius 1976; Rudy 1955; Sharrock 1966).

Research questions are as follows: (1) which natural resources were used by the prehistoric inhabitants, (2) which environmental factors influenced or restricted utilization of the park by the various cultural groups, (3) how did the quantity and distribution of critical resources affect their settlement and subsistence systems, (4) were water and the availability of arable land critical factors in the location of Anasazi storage and habitation sites, (5) did other environmental variables influence the type and location of smaller more ephemeral Anasazi sites, (6) were the resources sufficiently varied and abundant to permit year-round occupation by various cultural groups, (7) what resources were locally available and which resources had to be obtained from other areas by trade, long-distance procurement or seasonal residence patterns, and (8) did any of these patterns change through time?

#### Data Needs

The questions in this research domain will be addressed by (1) identifying potential resources (e.g., stone for tools, ceramic clay, building stones, water sources, natural shelters, presence of arable land, etc.) in the field, (2) assessing the importance of such resources based on their proximity to sites and the surrounding site density, (3) attempting to identify the source of various materials used to make artifacts by using published literature and direct observation during the fieldwork, and (4) evaluating the relationship of site location and type to important resources



and other environmental characteristics (e.g., topography, elevation, aspect). Information on the modern environment, available paleoenvironmental data from the Quaternary studies program and reconstructed settlement pattern data can be compared to reveal preferred site locations for various cultural groups and activities.

## Domain 4: Cultural Interaction

### Research Issue 5: What is the extent and nature of interaction between various cultural groups that inhabited the park?

This research domain addresses issues such as trade, influence and intermingling between cultural groups, and the nature of "boundaries", which we perceive to be fluid and ephemeral and to have changed through time. Given the existing information, this research issue is currently only relevant for the Late Prehistoric period cultural groups that inhabited the park. Evidence for Paleoindian, Archaic and Late Prehistoric/Protohistoric peoples is still too scant for consideration of this topic.

### Fremont and Anasazi

Early researchers assumed that Canyonlands was the locus of both Anasazi and Fremont habitation and generally placed the "boundary" between these groups at the Colorado and Green rivers (Jennings 1978; Marwitt 1970a). This implied that the Maze would have a preponderance of Fremont sites, and that the Needles and Island-in-the-Sky districts would be characterized by Anasazi occupation. Sharrock (1966:63), on the other hand, suggested that the whole park was inhabited by the Anasazi and that "... the line between the Fremont and San Juan Anasazi cultures will be found south of the Book Cliffs and north of the northern boundary of the Park." Identification of boundary lines does not make much sense, but it is important to identify the nature of interactions in "frontier" zones between the "core" areas of various cultural groups.

With the exception of a few Fremont sherds and some possible San Rafael Style rock art panels in the Needles District, evidence of Fremont occupation is lacking in existing survey data (Griffin 1984; Hartley 1980; Marwitt 1970b; Osborn et al. 1986; Sharrock 1966). In fact, the quantity of Fremont pottery is so limited in the Needles District that an explanation is probably required. Because of the unavailability of data from the recent Island-in-the-Sky excavations, the extent of Fremont occupation there is unknown, but was probably limited, if present at all. Gunnerson (1957) reports that Island-in-the-Sky was primarily occupied by the Anasazi between A.D. 900 and 1200. Berry (1975) failed to identify any Fremont sites in his survey of Arches National Park northeast of the Island-in-the-Sky District.

The 1975 survey in the Maze District recorded Fremont components on 21 sites but revealed a much more substantial Anasazi presence. The Fremont sites were generally small and ephemeral, leading Lucius (1976) to conclude that the area was only sporadically used by Fremont peoples. While others have tried to establish a "boundary" between the Anasazi and Fremont, Hogan et al. (1975) have taken a different approach, one similar to the approach used here. In discussing the Maze situation, they suggest that the area may have been a frontier or buffer zone subject to "occasional use by all agricultural groups of the region . . . Such a buffer zone situation may aid in the explanation of why both cultures [the Anasazi and Fremont] remained relatively unaffected by their contact" (Hogan et al. 1975:26). Of course it has yet to be demonstrated that both groups were using the Maze at exactly the same time.

Based on currently available data, it appears that the areas slated for survey during the first year of the project were subject to only limited Fremont utilization, if the Fremont were present at all. However, there is still the problem of Fremont style pictographs in an area

otherwise exhibiting almost exclusively Anasazi traits. While the co-occurrence of distinctive Fremont and Anasazi traits is not necessarily uncommon (e.g., Jennings and Sammons-Lohse 1981; Madsen 1982), it still requires explanation. Given the lack of other Fremont materials, Sharrock (1966) suggests that the Anasazi borrowed and executed Fremont rock art styles. Other explanations may also warrant investigation.

The specific questions requiring further research are (1) were the Fremont present in the Needles District or can the few Fremont traits be attributed to influence and trade, (2) if the Fremont were present in the Needles District, were they coeval with the Anasazi and, if so, what was the nature of the relationship, and (3) was Canyonlands a frontier zone between the Fremont and Anasazi as speculated by Hogan et al. (1975)?

### Kayenta and Mesa Verde Anasazi

A review of existing literature indicates the presence of occasional Kayenta Anasazi pottery in the Needles District (Osborn et al. 1986; Sharrock 1966); also, the architectural remains more clearly resemble the Kayenta than the Mesa Verde style. At issue is whether the Kayenta pottery reflects long-distance exchange or intermingling within the Canyonlands area. Further research is also needed to determine whether the architectural style is the result of Kayenta influence or presence, or simply a trait that developed in situ because, for example, the sites were intended for short-term use and there was no need to expend the effort building classic Mesa Verde style structures.

Research questions relevant to this issue are (1) what is the extent of Kayenta pottery in the Needles District, (2) can any other artifactual materials be attributed to the Kayenta, (3) does the architectural style represent Kayenta influence or is it simply a "sloppy" rendition of the classic Mesa Verde style, and (4) are the Kayenta traits the result of trade/ influence?

### Data Needs

To address questions outlined in this research issue, artifacts and features attributable to the Fremont and the Kayenta Anasazi need to be tabulated, plotted and compared with similar artifacts and features in each group's respective "core" area. Use of existing collections from the park will be helpful because these artifacts are available for more detailed laboratory study. In addition, the architecture at all Anasazi sites needs to be recorded in detail and compared with sites in the Mesa Verde and Kayenta core areas.

### Research Issue 6: To what extent were the various cultural groups engaging in trade? What items were exchanged and where were they obtained?

This research issue overlaps with the preceding issue to the extent that nonlocal artifacts such as Kayenta or Fremont pottery could represent trade rather than intermingling between different cultural groups within what are now the park boundaries. Beyond pottery, there is currently little evidence for extensive trade, particularly over long distances, during any cultural period in southeastern Utah.

Hargrave (1979) reports on a scarlet macaw feather artifact recovered from a probable Pueblo II/III Anasazi context in Lavender Canyon; this artifact is believed to have been manufactured in Mexico (Hargrave 1979:1). Copper bells from Mesoamerica were recovered from Edge of the Cedars ruin in Blanding (Nickens 1982), and obsidian from various sources in north central and east central New Mexico and southwestern Utah has been recovered from a multicomponent Archaic and Pueblo II/III Anasazi site in Glen Canyon (Tipps 1983). Olivella shell beads and shaped turquoise were recovered from a Pueblo II village in Butler Wash (Nickens 1982). Other than the scarlet macaw artifact, there is currently no mention of exotic materials in the corpus of existing literature on Canyonlands, but future work may reveal other occurrences of long-distance trade.

## RESEARCH DESIGN

Research questions for this issue include: (1) is there any archeologically visible evidence of long-distance trade by the cultural groups that inhabited the park, (2) does the importance of long-distance trade vary through time or by cultural group, (3) what items were exchanged, and (4) where were they obtained?

### Data Needs

These research questions can only be addressed if the surveys locate exotic, nonlocal materials such as obsidian, shell,

turquoise, pigment, pottery or other distinctive materials that can be traced to their source. The presence of any such artifacts will be brought to the attention of the National Park Service and collected for detailed sourcing studies if approved by the National Park Service. A review of existing collections might also reveal the presence of previously unreported exotic materials.

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## Chapter 4

# METHODS

by Betsy L. Tipps

Completion of the survey involved five main tasks: (1) conducting a file search, (2) performing an intensive inventory of the two survey areas, (3) recording all extant cultural resources, (4) assessing all sites for stabilization needs, and (5) evaluating all sites for potential eligibility to the National Register of Historic Places. The remainder of this chapter describes our methods for executing each of these tasks, as well as the procedures used to conduct the testing and to evaluate the existing collections for research potential.

## File Search

Prior to commencing the fieldwork, file searches were conducted at the Utah State Historical Society-Antiquities Section, the University of Utah and the Needles District Ranger Office to gather information on known sites in the project area and ascertain the location of previous inventories. The National Park Service also provided microfiche copies of the site forms for all formally recorded sites within Canyonlands National Park as well as a 15-minute blue-line map showing their locations. The contract specified that all previously recorded sites encountered by the survey be rerecorded and designated by their original permanent site number. The file search records were used to determine which sites

had been previously recorded so that they were not assigned new numbers.

## Inventory Methods and the Identification of Cultural Resources

The project area was surveyed on foot, in adjacent sweeps by crews of two to five persons spaced 15 m apart. This systematic procedure was occasionally altered in difficult topographic situations, but the 15-m survey interval established at the outset of the project was rigorously maintained. Depending on the topographic setting, the first transect in a particular area was defined using a compass bearing or natural features, while subsequent sweeps were oriented relative to a pin flag line marking the edge of the previous sweep. The crew attempted to gain access to all shelters, alcoves and ledges. When this was not possible, the inaccessible area was scanned with binoculars for evidence of rock art, structures and other cultural materials. The crew made every effort to insure complete coverage of all areas in the study tracts.

In the Salt Creek Pocket Area, the sandy pocket floors were inventoried first, followed by survey of the sand-sandstone contacts, and finally the high rocky ridges separating the large valleys. Survey of the

## METHODS

Salt Creek drainage followed the natural stream corridor. The Devils Lane graben was surveyed in adjacent sweeps paralleling the long axis of the graben. Adjacent sweeps between distinctive physiographic features were used to cover Butler Flat and Chesler Canyon. In all areas, the tops of the talus slopes were included in the survey.

When any member of the survey crew located a feature or an item of cultural debris that was 50 or more years old, the entire crew stopped their forward sweep and carefully checked the area for other cultural materials. If fewer than 10 cultural items and no features were noted in a roughly 20- by 20-m area, the material was considered an isolated find (IF), plotted on the topographic map and briefly described in the notes. Isolated hearths were also considered isolated finds if they appeared to be of prehistoric or historic origin. Recent hearths associated with the jeep trail in the lower part of the Devils Lane Area were noted on the map but not recorded. Appendix B lists the IFs recorded during the survey and provides a map of their locations in each survey area.

Any concentration of 10 or more culturally produced items in a discrete scatter was treated as a site and formally recorded. Fewer artifacts were regarded as sites when associated with definite cultural features. Architectural remains were automatically considered sites regardless of the number of associated artifacts. This arbitrary site definition was relatively problem free, given the large and varied assemblages and spatially discrete nature of the majority of sites observed during the survey.

The only major problems with site definition were in a small area of Butler Flat. Here, blowing and drifting sand affected the amount of materials exposed at a particular locus sometimes making it difficult to determine whether adjacent artifact concentrations were part of the same or different sites. This site/site boundary problem was sometimes exacerbated when scattered

debitage occurred between areas of high artifact density. The crew made every effort to identify the main loci of cultural activity and to judge outlying artifacts in relation to these loci taking into account erosion and other factors. We feel that the site boundaries are adequate for present management and analytical purposes.

## Site Recording

As each site was identified, artifacts and concentrations of artifacts were marked with pin flags to delineate site boundaries and help determine the density of cultural debris. Double pin flags were used to denote tool locations, features and items of special note so that they could easily be relocated during the recording process.

After being thoroughly inspected, each site was mapped, photographed and recorded on an Intermountain Antiquities Computer System (IMACS) site form with site recordation responsibilities being shared by all crew members. The IMACS site forms require (1) administrative information such as location, access and site condition, (2) environmental information such as slope, aspect, physiographic setting, elevation, distance to water, soil type and vegetation, and (3) basic site data such as size, type, age, cultural affiliation, descriptions of artifacts, tools and features and assessments of site depth. The latter was estimated by examining cut banks and fill around rodent holes, and by evaluating the topographic and depositional setting of each site because ground-disturbing activities such as probing were not permitted by the contract. The sites were also photographed and mapped in accordance with professionally accepted procedures and marked to aid in relocation.

The remainder of this section provides more detail on some of the procedures used to record the sites as well as pertinent definitions used during the project. Copies of all site records and maps are on file at the National Park Service, Midwest

Archeological Center in Lincoln, the Utah State Historical Society in Salt Lake City and the Canyonlands National Park headquarters in Moab.

### Descriptive Site Types

During the fieldwork, sites were segregated into types that simply describe the site setting and summarize the cultural manifestations present. The former category includes two types, open and rockshelter/overhang/alcove. The latter category includes 11 types which are described below.

Determination of functional types was reserved for the laboratory after requisite analyses could be completed; functional types are discussed in greater detail in the succeeding section.

1. Lithic Source Area - Sites in this group are situated on natural occurrences of flakeable lithic material and contain evidence of on-site procurement of the lithic materials such as flaked cobbles, cores and blanks. These sites may also contain flakes from later reduction stages and tool manufacture, as well as groundstone artifacts.
2. Lithic Source Area with Features - Sites in this category are identical to those in the preceding group but also contain one or more expedient features such as hearths or ash stains.
3. Lithic Scatter - Lithic scatters are evidenced by debitage and may also contain groundstone and chipped stone tools. They differ from lithic source area sites in that they lack on-site lithic resources.
4. Lithic Scatter with Features - Sites in this category are identical to those in the preceding group but are accompanied by features such as hearths, cists, ash stains, rock alignments and stone circles. More complex features requiring a higher investment of labor and implying more extended use (e.g., masonry rooms, kivas, etc.) are included in the Masonry Architecture category.
5. Lithic Source Area and Sherd Scatter - Sites in this category are situated on natural outcrops of flakeable stone, have evidence of on-site stone procurement and also ceramic artifacts. They may also have groundstone or chipped stone tools. These sites are distinguished from lithic source areas lacking pottery because the presence of pottery adds a chronological dimension to functional interpretations.
6. Lithic Source Area and Sherd Scatter with Features - Sites in this group are the same as those in the preceding category except that they also contain expedient features such as hearths, ash stains and rock alignments.
7. Sherd and Lithic Scatter - Sherd and lithic scatters are sites with lithic debris and pottery, and frequently have groundstone and chipped stone tools. These sites lack on-site lithic resources.
8. Sherd and Lithic Scatter with Features - This class is the same as the Sherd and Lithic Scatter noted above, but also contains features indicative of low energy investment such as hearths, ash stains and rock alignments.
9. Masonry Architecture Site - This group of sites contains evidence of domestic or ceremonial masonry architecture such as rubble mounds, roomblocks, masonry structures and kivas. Most of these sites also exhibit expedient features as well as lithic and ceramic artifacts.
10. Feature Site - Sites in this category are solely composed of features such as petroglyphs, pictographs or masonry rooms, etc. They lack associated artifacts.
11. Historic site - Because the park's historic resources are being investigated by other researchers, no attempt was made to subdivide the historic sites into descriptive categories. This

category includes all historic/recent sites and components.

### Functional Site Types

While the descriptive categories may be useful for some purposes, their usefulness in studies of settlement patterns, environmental associations, and other aspects of the research design is more limited. In order to address the questions posed in the research design, we felt it was necessary to evaluate each site in terms of its function or role in the prehistoric settlement and subsistence system, and establish a functional site typology. While there is a theoretical basis for subdividing the sites into a large number of functional categories, such as stations, caches, locations, communication sites, field camps and base camps for the Archaic sites (cf. Binford 1980), and locations, storage sites, water control sites, field camps, field houses, primary habitations, ceremonial centers, etc., for the Anasazi sites, such subdivisions cannot be reliably made on the basis of surface evidence and survey data. Because of this limitation and the need for a typology that can be applied to at least two different settlement and subsistence systems (Archaic and Anasazi), as well as sites of unknown age and affiliation, we have limited the functional typology to three main groups: limited activity sites, field camps and habitations.

The limited activity category includes all sites that appear to have been used for a single specific purpose (e.g., flintknapping, procuring lithic material, storing food, processing plants, communicating messages through rock art) and subsumes sites such as stations, caches, extractive locations and water control sites. Five subtypes were recognized within this category to describe the type of activity which took place: lithic procurement/primary lithic reduction, lithic procurement/primary and secondary lithic reduction, primary and secondary lithic reduction, secondary lithic reduction and communication. Other categories, such as storage, plant processing, water control,

etc., will be added in future years if needed.

Field camps are the places where "task" groups camp and maintain themselves when they are away from their primary residence. Such sites may have been used on a single occasion, or repeatedly over a period of years. The final category, habitation sites, refers to sites used as a residence for an extended period of time. It applies to residential base camps inhabited by Archaic peoples on a seasonal basis, as well as seasonal field house sites and primary residences occupied by the Anasazi.

No attempt was made to subdivide the habitation sites into seasonal and year-round categories because the necessary data are not available and too little is currently known about the nature of occupation in the Needles District to make such inferences at this stage of the research. Such a distinction has been made for Anasazi sites in many parts of the northern Southwest where year-round habitations are typified by ceremonial structures, middens, southeastern aspects and seasonally occupied sites lack such attributes. But such a strong pattern is not apparent in the areas surveyed to date in Canyonlands National Park.

Like most functional typologies applied to survey data from central and southern Utah in recent years, this typology has its weak points. For example, Archaic field camps that were repeatedly occupied over a period of years can be difficult to distinguish from Archaic residential bases that were seasonally occupied, and it may be that a few sites were misclassified. Small Anasazi sites with midden deposits and limited architectural features are also problematical; relative to sites in the Anasazi core areas, their small size and ephemeral nature suggests that they were occupied on a short-term rather than a year-round or long-term basis and that they should be categorized as camps. But, these criteria may not be appropriate for categorizing sites in a frontier situation such as exists in Canyonlands and it may

be that such sites actually served as seasonal habitation sites. Unfortunately, these are not the kind of issues that can be resolved on the basis of survey data, and it can only be stated that more work is needed on this critical issue.

The following paragraphs discuss the criteria used to assign the sites to the various categories. As discussed in the research design, sites were assigned to the various categories on the basis of the basic archaeological data (site setting and physical remains present), as well as assessments of the types and diversity of activities represented, the length and intensity of the occupation, and the potential for buried deposits and features. At the request of the National Park Service, we have attempted to subsume Sharrock's (1966) and Kay's (1973) categories into those used for this analysis.

### Limited Activity Sites

Limited activity sites have small to large artifact assemblages but they are always homogeneous reflecting the limited range of activities performed. Sites with three or less types of chipped stone tools in addition to cores were categorized as limited activity sites if the tool types and artifact assemblage reflect a single activity and not a wide range of domestic chores. All of the limited activity sites have less than 20 formal tools and with few exceptions, they have a maximum artifact density of less than 20 items/m<sup>2</sup>. The limited activity sites are often small with the exception of lithic procurement loci which usually correspond with the size of the lithic source. Features other than isolated rock art and isolated storage facilities (granaries) are lacking. This category includes Sharrock's (1966: 64-66) "chipping sites", "petroglyph/pictograph sites" and "storage sites", even though no examples of the latter were found.

Because limited activity sites were occupied for a specific purpose and usually for a short period of time, the principal activity was easy to identify and this

category was subdivided into five groups reflecting the primary activity believed to have taken place. These five groups are defined below.

#### Lithic Procurement/Primary Lithic Reduction Sites

Sites in this group are situated on natural occurrences of flakeable lithic material and contain evidence of on-site lithic procurement and initial lithic reduction. Tested cobbles, decortication flakes, shatter and cores characterize the site assemblages, and a limited number of chipped stone tools are occasionally present. This category would include some of Sharrock's (1966:64) "chipping sites" as well as Kay's (1973:35) "quarry/primary lithic reduction stations."

Typical of the lithic procurement/primary reduction loci is site 42SA17089 located on a sandstone outcrop in a cove in the Salt Creek Pocket Area. The cove is covered with angular nodules of outcropping Cedar Mesa chert of red and reddish orange color and variable quality. Amidst the natural chert nodules are a few flakes from early reduction stages, seven cores and a crudely flaked biface in addition to many tested nodules and chunks of chert. This site covers an area of approximately 8164 m<sup>2</sup> and has a maximum density of 5 pieces of debitage/m<sup>2</sup>. The site form estimates between 100 and 500 pieces of culturally produced debitage on this site of unknown age and cultural affiliation.

#### Lithic Procurement/Primary and Secondary Lithic Reduction Sites

Sites in the lithic procurement/primary and secondary lithic reduction category are identical to those in the preceding group except that they also have evidence of secondary lithic reduction and tool manufacture. This category would include some of Sharrock's (1966:64) "chipping sites" and possibly some of Kay's (1973:35) "quarry/primary lithic reduction stations."

One site fitting this definition is site 42SA17160 located in the Salt Creek Pocket Area. This site consists of a medium-density lithic scatter associated with

a thin lens of red chert outcropping from the Cutler Sandstone on the north side of a long sandstone ridge. Lithic material is primarily red Cedar Mesa chert, although white chalcedony and gray chert are also present in the assemblage. Tested cobbles, shatter, decortication flakes and a core attest to on-site procurement of the Cedar Mesa Chert, whereas secondary and tertiary flakes, four biface fragments, two projectile point fragments and a modified flake reflect secondary reduction and tool manufacture. This site covers approximately 34816 m<sup>2</sup> and has approximately 2000 pieces of debitage which occur in a maximum density of 30/m<sup>2</sup>. This site is undated but presumed to be of aboriginal affiliation and date to the prehistoric period.

#### Primary and Secondary Lithic Reduction Sites

As the name implies, Primary and Secondary Lithic Reduction Sites are locations where primary and secondary lithic reduction, and tool manufacture and maintenance took place. These sites are characterized by cortical flakes and shatter in addition to secondary and tertiary flakes, and frequently contain both cores and chipped stone tools. These sites lack on-site sources of lithic material and tested cobbles, and contain much less shatter than either of the sites in the two preceding categories. Some of Sharrock's (1966:64) "chipping sites" would be included in this group. Kay's (1973:35) "primary lithic reduction stations" may also apply.

Site 42SA17088 in the Salt Creek Pocket Area typifies this category. Located on a sandstone bench near the head of a rincon, this medium-sized lithic scatter contains a core, two crudely flaked bifaces, one finely flaked biface, a side-notched projectile point and a blade in addition to shatter and flakes from decortication, thinning and final shaping. Locally procured red and reddish orange Cedar Mesa Chert predominates in the assemblage, though purple chert, brown chert, white chert and various chalcedonies are also present. The site covers an area of approximately

734 m<sup>2</sup> and has a maximum of 12 artifacts/m<sup>2</sup>. Approximately 100 artifacts are present at this undated site.

#### Secondary Lithic Reduction Sites

Secondary lithic reduction sites are scatters of lithic debitage often accompanied by a few lithic tools such as bifaces and projectile points. Most of the debitage is the result of secondary reduction of lithic materials reflecting tool manufacture and/or maintenance. These sites lack evidence of on-site lithic resources. Such sites would have been classified as "chipping sites" by Sharrock (1966:64) and "secondary manufacturing stations" by Kay (1973:35).

One such site is 42SA17139, a large but sparse, undated lithic scatter located along a shallow drainage on Butler Flat. Artifacts at this site include an Elko point, 2 fragmentary bifaces and less than 100 flakes derived from the secondary thinning and final shaping of bifacial tools. The preponderance of secondary flakes, bifaces and a finished projectile point indicate that tool manufacturing was the primary activity at this site. Lithic material types are quite varied and include red and orange Cedar Mesa chert, gray chert, tan chert, gray quartzite, pink chalcedony as well as other materials. The site covers 3177 m<sup>2</sup> and has a maximum density of 2 artifacts/m<sup>2</sup>.

#### Communication Sites

Rock art communication sites consist of pictograph and/or petroglyph panels that are not associated with evidence of habitation, e.g., middens, structures or other features. A few flakes or tools are occasionally found near the panels, but the primary activity at these sites was the production of art work. This category is analogous to Sharrock's (1966:66) "petroglyph/pictograph sites." Site 42SA1996 is a typical communication site. It consists of two separate panels of anthropomorphic and zoomorphic pictographs. No other features or artifacts are associated with the panels.

### Field Camps

Field camps show evidence of the wider range of activities necessary to maintain a task group away from its primary residence. These sites are thought to have been inhabited for short periods of time, and not as intensively as the sites in the habitation category. Camps lack dwellings although natural overhangs commonly provided shelter at such sites. At some camps, low, dry-laid walls, sometimes forming enclosures, probably served as windbreaks and in a few instances, rock alignments could have been formed by anchoring blankets possibly associated with removable, makeshift shelters. In all cases, investment in constructing shelters and domestic facilities is limited and the most common type of feature is hearths.

In contrast to the limited activity sites, the artifact assemblages at field camps are diversified, presumably reflecting a variety of domestic tasks. Tools reflect more than one type of activity (such as hunting and plant processing) and the frequent presence of ceramic artifacts suggests cooking and/or food storage. Sites with low-investment features such as hearths, walls, rock alignments, cists and rock art (in the absence of high-investment features such as dwellings and substantial middens) were classified as field camps, as were sites lacking features but containing artifacts indicative of several activities. Compared to habitation sites, middens and sturdy structures that represent a high-labor investment are lacking. Sites in this category compare favorably with those categorized as "transient camps" and "alcove camps" by Sharrock (1966:64-65) and Kay (1973:36).

A typical field camp is site 42SA17206 located in the Salt Creek Pocket Area. This site has a variety of artifacts indicative of plant processing, tool manufacturing and cooking or food storage. Plant processing tools include four manos and a metate fragment, whereas a fragmentary maul indicates pounding of some sort. Seven bifaces, a core and more than 500 flakes are evidence of tool production. Food storage and

cooking are indicated by the presence of gray and white ware jar and bowl sherds, respectively. A low wall abutted to the back of a shallow overhang may have served as windbreak within the natural shelter. This site covers an area of approximately 17485 m<sup>2</sup> and has a maximum artifact density of 86 items/m<sup>2</sup>. It was inhabited by Mesa Verde Anasazi during the Pueblo II-III time period.

### Habitations

Habitation sites show evidence of having been occupied for an extended period of time, more than a few weeks. Extensive middens, dwelling and storage structures, and other features indicative of a high investment of labor are usually present at habitation sites. Expedient features such as hearths are also present but usually in either large numbers or in addition to more substantial features. The artifact assemblage on such sites is usually large and tools are numerous and diverse indicating that a full range of domestic activities took place. Sites were assigned to this category if they contained substantial midden deposits in addition to dwellings or highly diversified tool assemblages. This category subsumes Sharrock's (1966:65-66) "open habitation sites", "alcove habitation sites" and "rockshelters", even though no examples of the two former types were found during the 1985 survey.

Typical of habitation sites recorded during the 1985 survey is site 42SA17123 located in the Devils Lane Area. This site consists of a dense concentration of lithic debitage associated with a smoke-blackened overhang containing a midden, a definite structure and two wall stubs. Artifacts found at the site reflect a variety of activities and include manos, metates, bifaces, hammerstones, modified flakes and ceramics. A core and more than 500 pieces of debitage are also present. This site covers an area of 9498 m<sup>2</sup> and was occupied by Mesa Verde Anasazi sometime during the Late Prehistoric period.

Another habitation site is 42SA17141 which covers an area of 18,369 m<sup>2</sup> near a series of hoodoos at the north end of Butler Flat. Interpreted as primarily a Late Archaic residential base, this site contains a fairly dense scatter of flakes (up to 200 flakes/m<sup>2</sup>), a core, five types of tools (manos, metates, bifaces, projectile points and a hammerstone) and three hearths, two of which are slab lined. The features and artifact assemblage indicate an extended stay that included activities such as tool production, plant processing and cooking.

### Site Age and Cultural Affiliation

The cultural affiliation and age of each site were inferred by cross-dating diagnostic artifacts and distinctive cultural features. Pottery and projectile points were the main criteria used to ascertain the cultural affiliation and age of the prehistoric sites, although features such as rock art styles and the presence of masonry architecture were also used.

Trying to make the most of the survey data, sites were assigned to a particular cultural group (and in some cases time period) even if only one or two diagnostic artifacts were present unless there was a specific reason to doubt that the "diagnostic" artifact(s) related to the site occupation. For example, a site with one Sudden Side-notched point would be attributed to Archaic affiliation and the Middle Archaic time period; a site with two indeterminate white ware sherds would be considered Anasazi, but undated within the Late Prehistoric period.

In doing this, we recognize that some sites will be misclassified because prehistoric peoples may have collected or used artifacts obtained from older sites (heirloom bias), or because they may have discarded "current" diagnostic artifacts on older sites while passing by. However, we, like Thomas (1986:620-621), believe that this approach is preferable to the alternative of not interpreting the sites at all, a practice

which can lead to more serious errors of interpretation as illustrated by Walling et al.:

Another factor contributing to an under-calculation of the Archaic occupation arises from the fact that the field workers in Washington County were oriented to the permanent Formative sites and responded very little to Archaic evidence. It should be noted that specialists in Formative cultures believe that they cannot accurately determine the temporal position of a site with less than 75 sherds while many contend that, if possible, a collection should contain about 500 sherds. To such scholars, the identification of a site as Archaic on the basis of a single point borders on scholarly irresponsibility.

It thus appears likely that much Archaic data is ignored. . . ." [1986:16].

Although no Paleoindian sites were found, Paleoindian affiliation would have been inferred from fluted projectile points, spurred end scrapers and other technologically distinct artifact types. Age would have been inferred from the type of fluted point present.

Archaic affiliation was inferred on the basis of diagnostic dart points, two distinctive Archaic period rock art styles, Barrier Canyon and Glen Canyon Linear, and distinctive, Archaic-style, slab-lined hearths. Sites identified as having an Archaic affiliation on the basis of rock art or slab-lined hearths were considered undated within the Archaic period, except when a radiocarbon date was available from a hearth.



The age of Archaic affiliation sites with projectile points was estimated by cross-dating the points following Holmer (1978, 1986). The following point styles were assigned to the following time periods: "Desha-style", Pinto, Humboldt Concave Base and Northern Side-notched were attributed to the Early Archaic which ranges from about 7000 to 4200 B.C. on the northern Colorado Plateau. Rocker, Hawken, Sudden and San Rafael Side-notched, as well as McKean Complex points, were used to identify the Middle Archaic, dating from roughly 4200 to 1700 B.C. The Late Archaic, which lasted from approximately 1700 B.C. to A.D. 500, was recognized by the presence of Gypsum (or Gatecliff) points. Although not all of the preceding point styles were found during the first season of fieldwork, they are included here because they will be used to assign age to sites recorded during subsequent years.

Initially, Anasazi affiliation was inferred if one or more of the following artifacts or features was present: Anasazi pottery, hands motif rock art, trough metates and Style B, C and Large Stemmed projectile points (see Chapter 6 for definitions). Bull Creek and Parowan Basal-notched projectile points were not used to infer Anasazi affiliation because such points are sometimes found in Fremont assemblages. Style A points were similarly disregarded for assigning affiliation because they can be easily confused with Rosegate points which would indicate other cultural affiliations. Anticipating the possibility that there could be Fremont sites with architectural features such as masonry rooms and granaries, such features were not initially used to assign cultural affiliation on sites lacking other diagnostic artifacts or features. When the survey failed to yield any evidence of Fremont occupation, and all such features found during the survey had typical Anasazi characteristics, sites with these features were also assigned an Anasazi cultural affiliation.

Priority for assigning dates to the Anasazi sites was given to the pottery, with dates following Breternitz et al. (1974) and Colton (1956). The ceramic dates were supplemented by temporal information available for various arrow points (cf. Hayes and Lancaster 1975; Holmer and Weder 1980). Sites considered Anasazi on the basis of architecture, rock art and trough metates were considered undated within the Late Prehistoric era.

Given that previous researchers reported a Fremont occupation in the Needles, criteria for identifying such sites were established at the outset of the project. The following were considered Fremont diagnostics: Utah Desert Gray Ware and Fremont Desert Gray Ware pottery, Southern San Rafael Fremont Style rock art, leather moccasins, half-rod-and-bundle basketry and Utah-style metates. Crude, brownware pottery and Desert Side-notched points were considered diagnostic of Numic affiliation. Navajo Gray Ware pottery (such as Piñon Gray), hogans and/or hogan rings were considered diagnostic of Navajo affiliation. None of these diagnostics were found during the first season of survey.

The cultural affiliation of sites containing obviously historic features such as fences, corrals and mining claims, and modern artifacts such as glass, wire and metal were assumed to be Euroamerican based on information gathered during the background literature review. Because this survey was to record but not analyze historic sites, no attempt was made to determine the exact age of this historic sites; such research is being done by the historic contractor, Western Historical Studies, Inc.

Sites containing points, pottery and/or features indicative of more than one cultural group were considered multi-component. When materials from more than one time period were present, further evaluations were made to determine whether there were multiple occupations, or whether there was simply a temporal overlap among diagnostic materials. There

did not appear to have been significant disturbance or artifact collection on most sites. Thus, the range of affiliation and age in the surveyed areas appears to be relatively representative.

## Artifacts

Because the contract prohibited artifact collection except for unusual or diagnostic items, details about the numbers and types of all artifacts were recorded in the field. The pottery was classified using criteria and types established by Breternitz et al. (1974), Colton (1955, 1956) and Rudy (1955). Assignment of pottery to a particular cultural group was based on temper type, as determined using a hand lens, and paste characteristics. All pottery was further separated into types based on diagnostic decorative attributes such as surface manipulations and decorated designs. At the discretion of the crew chief, designs on some of the decorated sherds were drawn.

With the exception of modified flakes, a reasonable attempt was made to locate and record each formal lithic tool. These tools were assigned a number based on the IMACS code for that particular artifact type—for example, bifaces were referred to by the IMACS descriptor IG, with each biface being sequentially numbered, IG-1, IG-2, etc.—described, and then plotted on the site map to aid in their relocation. All possibly diagnostic projectile points were drawn; other lithic tools were drawn as appropriate. Following IMACS format, the amount of debitage was estimated and recorded in ordinal level categories (1-9, 10-25, 25-100, 100-500 and 500+), and the presence and predominance of the various flake types was recorded. Definitions used on this project for the various flake types, as well as for formal tools are presented below.

## Bifaces

The biface category includes all bifacially worked implements—other than those within the morphological range of projectile

points, drills and choppers—that exhibit flaking across both faces and around the entire perimeter. "Projectile points" lacking at least some portion of the haft element are also included in this class. The biface category therefore includes implements used for a wide range of purposes such as cutting, scraping and projectiles. Some of the bifaces may have also served as conveniently transportable cores that could be used to obtain usable flakes and make bifacial tools such as projectile points.

From a technological perspective, biface production can be viewed as a series of sequential events, beginning with removal of the cortex and continuing through a series of refined flaking stages that lead to the completed tool (e.g., Frison and Bradley 1980). Researchers have applied various names to the intermediate stages such as blank-preform-product, Stage I-II-III-IV-V, etc., with bifaces being classified to a particular group based on amount of cortex, artifact thickness, margin sinuosity, size and orientation of flake scars, etc. Not all tools pass through all stages, and tools need not be flaked to the final stage to obtain edges suitable for utilization. Furthermore, tools may wear out or break and need to be reworked, requiring a return to earlier flaking stages. Such sequences of biface manufacture are arbitrary classificatory devices used to simplify analysis and do not necessarily duplicate stages conceptualized by the aboriginal flintknappers.

Because this project is a noncollection survey and all analyses had to be conducted in the field, only two technological categories were recognized: bifacial blank and preform. Bifacial blanks represent preliminary shaping and percussion thinning of an implement. They are percussion flaked, thick, crudely shaped bifaces with sinuous margins and remnant platforms. They frequently have large, deep flake scars on both sides resulting from bifacial flake removal. They possess little or no extra mass but may exhibit cortex. They can usually be reduced into one of several different tool types, used to obtain flakes or

used as tools themselves. Preforms are thinned, often symmetrical, relatively well-flaked items that could have been used as generalized cutting tools or further flaked into more refined tools. They have slightly sinuous to straight margins and may exhibit pressure flaking.

### Projectile Points

Bifacially flaked tools with a hafting element and pointed tip were classified as projectile points. Specimens that no longer retained at least some portion of the haft element (i.e., tips and midsections) were described with the bifaces. Most of the artifacts classified as projectile points were probably used as projectiles, though some may have been for cutting or other purposes.

The projectile points were classified into types on the basis of morphological, technological and stylistic attributes using typologies established for the northern Colorado Plateau (Holmer 1978, 1986; Holmer and Weder 1980) and Great Basin (Hester 1973). Where available, dates derived from northern Colorado Plateau sites (as opposed to Great Basin sites) were used to assign chronological periods.

### Drills

Bifacially flaked tools with a long, narrow, deliberately flaked bit were classified as drills. Artifacts with small projections were grouped in other categories. Drills were used to perforate wood and other soft materials.

### Choppers

Choppers are thick, heavy implements with one or more crudely flaked working edges. They lacking hafting elements such as grooves and notches and are large enough to have been used as hand axes.

### Scrapers and Unifaces

Scrapers are flake tools with a steep edge angle produced by percussion or

pressure retouch. Most often they are unifacially flaked, with flaking generally appearing on the dorsal surface. The working edges are located on the end or lateral margin of the flake, or both, and can be straight, concave or convex in plan view. Artifacts categorized as unifaces are less formalized than those classified as scrapers, and can be considered expedient rather than formal tools. Like scrapers, they generally exhibit unifacial retouch and have a working edge morphology suitable for scraping; the retouch is less pronounced and regular, and less likely to have modified the edge into a regular shape.

### Gravers

Gravers are expedient tools usually produced by retouching a small, thin flake or piece of shatter. They have a small, intentionally flaked, sturdy projection that was probably used to engrave or perforate an object piece.

### Modified Flakes

Modified flakes are flakes exhibiting unifacial or bifacial retouch along one or more margins, as well as flakes that had been modified by use. The modified flakes vary considerably in morphology and technological flaking stage, but the retouch or wear generally did not modify the overall flake outline. These expedient tools could have been used for a variety of cutting and scraping tasks. In contrast to other tool types, no attempt was made to locate every modified flake on every site; this would have required much more recording time than was possible within the constraints of the contract.

### Hammerstones

Hammerstones are small stones used for a variety of pecking, pounding and hammering activities such as flaking chipped stone implements, resharpening grinding tools, crushing pigment, etc. They generally consist of an unworked river cobble or nodule of tough stone that exhibits

battering and/or crushing on the ends, ridges and/or faces. Hammerstones range from somewhat spherical to elongate and were hand held rather than hafted tools.

### Mauls

Mauls are large, heavy implements with a notch or groove near the poll that could be used to haft the implement. Used for hammering rather than chopping, they differ from axes in having rounded striking surfaces rather than pointed edges, and in having almost parallel rather than converging faces. They are typically made from a dense, heavy stone, and vary considerably in shape.

### Manos

Manos are the active upper component which is moved against the passive lower component, the metate, to achieve grinding. Specimens greater than 15 cm long were categorized as two-hand manos; those shorter than 15 cm were considered one-hand manos. Broken manos were not categorized by type unless a sufficient amount of the tool was present for a certain type assignment. The number of grinding faces was also recorded.

### Metates

Metates are the large, stationary grinding stone on which food is milled using a smaller upper stone. Three categories of metates were recognized—flat (slab), trough and basin (cf. Woodbury 1954). Flat or slab metates are defined as having a flat grinding surface covering most or all of the tool surface. On well-worn specimens, the grinding surface may be flat from side to side (width) and slightly concave from end to end (Woodbury 1954:54). Grinding on flat metates was achieved in a reciprocal manner.

Trough metates are characterized by a subrectangular grinding surface that parallels the long axis of the metate. Because the grinding surface is narrower than the metate, the lateral margins of the grinding

surface are bordered by raised rims on well-worn specimens. Grinding may extend the entire length of the metate so that the trough is open on both ends or stop short of the end so that the trough is enclosed by a rock lip on one end. Grinding on trough metates was also conducted in a reciprocal manner. Basin metates are characterized by an oval grinding depression indicating rotary grinding motion. On minimally worn, unshaped specimens, slab, trough and basin metates only differ from one another in the extent of the grinding (i.e., whether the grinding covers the entire surface as in a slab metate, or a portion of the surface as in a trough or basin metate) and whether the grinding area is subrectangular (as in a trough metate) or oval (as in a basin metate) in shape. When the fragmentary nature of a specimen precluded type determination, the specimen was classified as indeterminate.

### Cores

Cores are the piece of stone reduced by the flintknapper to obtain flakes, blades and blanks to make tools, etc. They may also be reduced into tools themselves. They are characterized by negative flake scars reflecting the detachment of flakes. Depending on the form and type of the raw material and the technology used, cores vary considerably in size, shape and cross-section. For this project, items were only considered cores if three or more flakes had been removed. When possible, cores were categorized as multidirectional (or random), bidirectional or unidirectional. On multidirectional cores, flakes were removed in a variety of directions from multiple striking platforms. On bidirectional cores, flakes were removed from opposite directions using two striking platforms. On unidirectional cores, flakes were removed in one direction from a single platform surface; the resulting cores are cone or prismatic (polyhedral) shaped.



## Debitage

Debitage, the residual lithic material resulting from tool manufacture, was classified according to the definitions presented in the IMACS manual (IMACS 1985). *Primary flakes* or *decortication flakes* consist of flakes from the early stages of reduction, that is, removing the unusable cortex and mass from the object piece. These flakes are usually thick and angular, and exhibit a considerable amount of cortex on the dorsal surface. *Secondary flake*, as defined for this project, refers to bifacial thinning flakes that are slightly curved from the proximal to the distal end, relatively thin in cross section, longer than they are wide, and which often exhibit parallel flake scars on the dorsal surface. These flakes rarely exhibit cortex and may have prepared platforms.

*Tertiary flake* refers to flakes detached during final shaping. They are usually small and thin and may be produced by pressure flaking or direct freehand percussion. Most tertiary flakes have abraded platforms and lack cortex. *Shatter* consists of angular and irregular pieces of stone which are products of flintknapping, but which lack distinctive flake attributes.

## Blades

Blades were categorized as a

Specialized flake with parallel or sub-parallel lateral edges; the length being equal to, or more than, twice the width. Cross sections are plano-convex, triangulate, subtriangulate, rectangular, trapezoidal. . . . Associated with prepared core and blade technique . . . [Crabtree 1972:42].

## Features

Features were recorded using the categories specified on the IMACS site form.

These categories are straightforward and require only few clarifications. To distinguish them from rock alignments, walls were defined as having two or more courses. If one or more walls appeared to enclose a space, they were recorded as granaries, surface rooms or some other type of structure rather than walls.

## Maps

In addition to the basic IMACS form, a detailed pace and compass-derived site map was prepared showing the topographic setting, the extent of surface artifacts, and the location of features, artifact concentrations, formal tools, the mapping datum, modern roads and trails, and other pertinent data. The location and direction of each photograph was also plotted on the site map.

In the Salt Creek Pocket Area, sites were plotted on Department of Energy 1:12000 blue-line maps supplied by the National Park Service. These highly detailed, large-scale maps allowed for accurate plotting of site size, shape and location. Subsequent to the fieldwork, site locations were transferred onto 15-minute U.S.G.S. topographic maps so that they could be added to the 15-minute park base maps housed at the Midwest Archeological Center. The site locations can also be transferred to 7.5-minute topographic maps when they become available for the area. The only maps available for plotting site locations in the Devils Lane Area were 15-minute U.S.G.S. topographic maps. Relatively few difficulties were encountered in plotting sites in either area because the maps were sufficiently detailed and the local geographic features sufficiently distinct to allow three-way triangulation.

## Photographs

Photographs of the site area, as well as photographs of selected features and artifacts were taken using black and white film. The location and direction of each photograph was recorded on the site map

and described on a photographic record form. A few sites and unusual and exemplary artifacts and features were also photographed with color slide film; some of these photographs will eventually be used in the park's interpretive program.

## Site Tagging

As part of the recording procedure, a flat aluminum data tag, inscribed with "P-III Associates, 1985" and the appropriate sequentially assigned temporary site number (1-1, 1-2, etc.), was left at the site; its location was marked on the site map as the datum. Permanent Smithsonian site numbers were obtained at the conclusion of the fieldwork. Table C-1 in Appendix C correlates the temporary field numbers and permanent site numbers of all sites recorded during the 1985 field season.

## Stabilization Evaluations

The scope of work specified that sites recorded by the survey team be evaluated for stabilization needs. This task was accomplished by completing a Stabilization Data form for all sites exhibiting visible architecture. This two-page form requires information such as the number of structures requiring stabilization, the rate, type and location of deterioration, and proposed methods of repair. The stabilization forms are appended to the IMACS site forms which are presented in an appendix.

## National Register Evaluations

All sites recorded during the project were evaluated for significance and eligibility to the National Register of Historic Places according to the National Register Criteria for Evaluation outlined in 36CFR60.4. These criteria have been reviewed repeatedly in the literature and need not be reiterated here. Within the framework of the National Register criteria, a site also had to (1) have a potential for contributing nonredundant data to the

study of significant research questions and (2) maintain sufficient integrity that it could enhance our understanding of Canyonlands' cultural past. In-field evaluations of site significance were made by the field supervisor. These evaluations were reviewed in the laboratory in light of all project data. When the project is complete, groups of sites will be evaluated within the contexts of regional archeological knowledge for possible nomination to the National Register of Historic Places as districts.

## Testing Procedures

As noted in the Introduction, the contract provides for limited testing to obtain radiocarbon samples as well as flotation samples from which subsistence data can be obtained. While the specific procedures used to test sites reported in this volume appear in Chapter 7, the general procedures to be used for all testing activities during this multiyear project are outlined here, as are the methods used to process the flotation samples and tree-ring correct the radiocarbon samples.

The amount of testing conducted in any contract year is dependent on funding and the discovery of features that might yield information relative to the research design. Sites are selected for testing in consultation with the Rocky Mountain Regional Archeologist and Canyonlands National Park Archeologist. In most cases, testing is limited to discrete features such as hearths and roasting pits, but may also include middens if data potential warrants.

Testing at each site is initiated by photographing, mapping and describing the feature to be tested. Following this, discrete features are excavated in natural levels (if present), leaving at least half of the feature intact, in accordance with National Park Service preservation policies. Charcoal and flotation samples are collected from the excavated fill, with any remaining fill being passed through one-quarter-inch hardware cloth to obtain

all artifacts. The profile and plan of the partially excavated features are then drawn and photographed, and the features are refilled with sterile sand.

Testing of midden deposits is accomplished by staking in a 1- by 1-m or smaller test unit, oriented on true north, plotting its location on the site map, and excavating the pit in natural or arbitrary 10-cm levels to sterile deposits or bedrock, following the contour of the modern surface. All fill is screened through one-quarter-inch mesh, with artifacts being collected and bagged by major artifact class. After recording the stratigraphy, test pits are backfilled.

### Flotation Samples and Plant Macrofossils

by Betsy L. Tipps and Nancy J. Coulam

The bulk samples were processed using a modified version of the water flotation technique outlined by Bohrer and Adams (1977:37). This consists of (1) screening the dry sediment through a 32-mm (1/8 in) sieve, (2) removing artifacts and large macrofossils from the dry screen, (3) pouring the sediment into a bucket of water being aerated by three lines of forced air (emanating from a small pump), (4) stirring the sediments to allow the organic material to float to the surface, (5) maintaining the sample in the bubbling water for one minute or until most of the organic materials rises to the surface, (6) decanting the floating and suspended organic material into a #35 (0.5 mm) screen, (7) transferring the organic materials onto a paper plate, and (8) air drying the sample for several days. After the samples dried, they were screened through graduated U.S. Standard sieves (4.0 mm, 2.0 mm and 0.5 mm) and then each size sorted sample was examined under a 45x microscope.

The samples contained unburned plant parts such as rootlets, leaves and seeds. Because these samples are from open sites, these uncharred specimens are assumed to be modern contaminants and hence were

not identified. Burned and presumably prehistoric plant specimens were identified by comparison with a modern reference collection and with the aid of seed identification manuals (Albee 1980; Bailey 1949; Martin and Barkley 1961). Plant nomenclature follows Welch et al. (1987). Plant macrofossils were identified to the most specific taxon possible given specimen size and condition.

### Radiocarbon Samples

In the field, charcoal samples were collected with a clean trowel and placed in foil bags for storage and shipment to the radiocarbon laboratory where they were processed using standard radiocarbon dating procedures.

Because past atmospheric levels of carbon-14 have fluctuated, radiocarbon years are not necessarily the same length as calendar years and must be corrected to calendar dates using a tree-ring calibration curve derived by radiocarbon dating wood samples of known age. For the testing reported in this volume, the calibrated age ranges were derived using the CALIB computer program, Version 1.2, which uses a decadal data set to calibrate radiocarbon ages up to 4020 years B.P. (Stuiver and Reimer 1986). Also because of variation in past atmospheric carbon-14, radiocarbon samples with differing dendroages (calendar dates) can have the same radiocarbon age. Conversely, a single radiocarbon sample may cross the calibration curve in more than one location so that it has more than one dendroage (Stuiver 1982:5). This is the case with one of the samples obtained during the first season of fieldwork (see Chapter 7).

### Evaluations of Existing Records and Collections

by William A. Lucius

Prior to the initiation of the Canyonlands Archeological Project, numerous projects had been undertaken in the park, resulting in the formal documentation of

more than 700 sites and the preparation of more than 20 manuscripts, reports, articles and monographs (National Park Service 1984:7, Appendix A). To evaluate the nature and usefulness of this existing source of information, personnel from P-III Associates perused all available documents regarding Canyonlands prehistory and conducted a preliminary inventory of existing collections at the University of Utah, the park and the Midwest Archeological Center. The University of Utah collections are from a survey conducted by Sharrock (1966) in the Needles District in 1965. The

park collections, which are housed at Arches National Park, are mainly composed of unprovenienced artifacts turned in by visitors. Collections from the Midwest Archeological Center are from its excavations in Island-in-the-Sky and from the Maze survey conducted by the University of Utah in the early 1970s. The latter collection mainly consists of lithic artifacts. As per contract specifications, the results of this evaluation will be more thoroughly discussed in the report of the 1986 field season.

## Chapter 5

# SUMMARY OF CULTURAL RESOURCES

by Nancy J. Hewitt, Betsy L. Tipps and William A. Lucius

A total of 142 sites and 76 isolated finds (IFs) was recorded during the 1985 field survey activities in two separate areas of the Needles District, Canyonlands National Park. One hundred and one sites and 66 isolated finds were documented in the Salt Creek Pocket Area, whereas 41 sites and 10 isolated finds were recorded in the Devils Lane Area. A list of the isolated finds and their locations can be found in Appendix B. A tabular summary of each site discovered during the survey comprises Appendix D. This chapter of the report summarizes the cultural resources in each area and discusses how selected site attributes correlate with environmental characteristics.

Analyses of the cultural affiliation and age of the 142 sites resulted in the identification of 153 components, 148 prehistoric and 5 historic. Temporal placement ranges from the Early Archaic through the historic period and recent past, with the cultures of Archaic, Basketmaker, Anasazi, Fremont and Euroamerican being represented (Table 2). No sites of Paleoindian, Numic, Navajo or Ute origin were encountered.

Approximately 61% of the sites and components could not be associated with a particular culture or assigned to a definite time period. On the basis of the extant artifacts, these sites were assigned to the general categories of "aboriginal" and "pre-

historic." This category includes 61 limited activity sites, 30 field camps and 2 habitation sites. Excavation of the field camps and habitation sites might reveal data that would place the sites in a temporal/cultural framework, but the remaining sites are primarily lithic scatters with few tools and no accumulated deposits or features, and it is unlikely that excavation would uncover datable materials.

Overall, the majority of the culturally identifiable sites and components are Archaic (9.8%) or Anasazi (24.8%). Only one Basketmaker/Anasazi (0.7%) and one Fremont (0.7%) site were identified. The remaining sites and components identifiable to cultural affiliation (3.3%) are Euroamerican. Most of the Archaic sites are undated within the Archaic period, but the few datable sites indicate that the Needles District was inhabited during all three Archaic periods, Early, Middle and Late. This find is particularly significant given the paucity of existing data on Archaic occupation in the Needles District. Although few in number, the discovery of early Anasazi sites (Basketmaker III-Pueblo I, Pueblo I and Pueblo I-II) is also important because this early occupation went unrecognized during Sharrock's (1966) survey. As expected on the basis of previous work in the Needles, the majority

## SUMMARY OF CULTURAL RESOURCES

Table 2. Frequency of sites and components by age and cultural affiliation.

Time Period	Archaic	Basket-maker/ Anasazi	Anasazi	Fremont	Aboriginal	Euro-american	Total
Early Archaic	1	-	-	-	-	-	1
Middle Archaic	1	-	-	-	-	-	1
Late Archaic	2	-	-	-	-	-	2
Archaic	11	-	-	-	-	-	11
Basketmaker III-							
Pueblo I	-	1	-	-	-	-	1
Pueblo I	-	-	1	-	-	-	1
Pueblo I-II	-	-	1	-	-	-	1
Pueblo II	-	-	4	-	-	-	4
Pueblo II-III	-	-	14	-	-	-	14
Pueblo III	-	-	5	-	-	-	5
Late Prehistoric	-	-	13	1	-	-	14
Prehistoric	-	-	-	-	93	-	93
Historic	-	-	-	-	-	5	5
Total	15	1	38	1	93	5	153

of sites date to Pueblo II, Pueblo II-III or Pueblo III.

Table 3 shows the frequency of sites by descriptive and functional site type; there is an obvious association between the two which reflects the use of descriptive types in making functional assignments, but no one-to-one correlation. Predictably, lithic scatters are the most common descriptive site type making up 45.8% of the total. The next most common category, lithic scatters with features makes up only 14.8%. Lithic source areas account for 11.3%, although 15.5% of the total sites and components reflect some amount of lithic procurement. The remaining 28.1% of the sites are distributed among the other eight categories. From these data, it can be inferred that the two study tracts were primarily used on a short-term basis for resource procurement and camping. This inference is supported by the numbers of the various functional site types shown in Table 3. Limited activity sites are the most common functional site type accounting for 53.5% of the total (n=76). Field camps account for

38.0% (n=54) and habitations comprise only 6.3% of all sites (n=9). Figures in Appendix E show the distribution of the various site types in each survey area.

Of the sites identifiable as Archaic, field camps (n=5) and limited activity sites consisting solely of rock art (n=6) are the most common, though three habitation sites or residential bases were also identified (Table 4). Only one other Archaic site was discovered; it is a limited activity, secondary lithic reduction loci. The abundance of field camps and habitations relative to limited activity sites other than rock art suggest that Archaic peoples resided in the project area for a period of time and were not simply passing through.

Among the Anasazi sites, the majority of sites are field camps (n=22), with smaller numbers of habitation sites (n=6), secondary lithic reduction sites (n=5) and communication (rock art) sites (n=4). The preponderance of field camps and paucity of habitation sites argues that the Anasazi generally used the project area on a short-term and probably seasonal basis, rather

Table 3. Frequency of sites by descriptive and functional site types.

Site Type	Limited Activity Sites							Field Camps	Habitation Sites	Historic Sites	Total
	Lithic Procurement/ Primary Lithic Reduction Site	Lithic Procurement/ Primary and Secondary Lithic Reduction Site	Primary and Secondary Lithic Reduc- tion Site	Secondary Lithic Reduction Site	Communi- cation Site	Inde- terminate					
Lithic source area	3	11	-	-	-	-	2	-	-	16	
Lithic source area with feature	-	-	-	-	-	-	2	1	-	3	
Lithic source area and sherd scatter	-	-	-	-	-	-	1	-	-	1	
Lithic source area and sherd scatter with feature	-	-	-	-	-	-	2	-	-	2	
Lithic scatter	-	-	15	35	-	-	15	-	-	65	
Lithic scatter with feature	-	-	-	-	2	1	16	2	-	21	
Sherd and lithic scatter	-	-	-	3	-	-	4	-	-	7	
Sherd and lithic scatter with feature	-	-	-	-	-	-	7	2	-	9	
Masonry architecture site	-	-	-	-	-	-	5	4	-	9	
Feature site	-	-	-	-	6	-	-	-	-	6	
Historic site	-	-	-	-	-	-	-	-	3	3	
Total	3	11	15	38	8	1	54	9	3	142	

Table 4. Frequency of sites and components by cultural affiliation and functional type.

Site Type	Limited Activity Sites						Field Camps	Habitation Sites	Historic Sites	Total
	Lithic Procurement/ Primary Lithic Reduction Site	Lithic Procurement/ Primary and Secondary Lithic Reduction Site	Primary and Secondary Lithic Reduc- tion Site	Secondary Lithic Reduction Site	Communi- cation Site	Inde- terminate				
Archaic	-	-	-	1	6	-	5	3	-	15
Basketmaker/Anasazi	-	-	-	-	-	-	1	-	-	1
Anasazi	-	1	-	5	4	-	22	6	-	38
Fremont	-	-	-	-	1	-	-	-	-	1
Aboriginal	3	10	15	32	-	1	30	2	-	93
Euroamerican	-	-	-	-	-	-	-	-	5	5
Total	3	11	15	38	11	1	58	11	5	153

## SUMMARY OF CULTURAL RESOURCES

than for extended residence. Even the six habitation sites are small by Anasazi standards and suggest a limited duration of occupation. A similar situation obtains for the Basketmaker/Anasazi site.

The majority of limited activity sites are unidentifiable to age or cultural affiliation due to the lack of diagnostic artifacts produced and left as a result of the specialized, short-term activities that took place. Most of these sites are probably Archaic or Anasazi but this can only be confirmed by further work consisting of excavation to recover diagnostic artifacts and datable features. In-depth, detailed studies of the lithic technology represented at dated sites may also reveal certain technological characteristics that can be used to date these otherwise indeterminate sites.

Among the undated aboriginal sites, secondary lithic reduction sites and field camps are the most common accounting for 34.4% and 32.2% of the total, respectively. Primary and secondary lithic reduction sites account for about 16.1% whereas lithic procurement/primary and secondary lithic reduction sites comprise about 10.8%. Other site types—lithic procurement/primary lithic reduction sites and habitation sites—account for only a small amount.

## Salt Creek Pocket Area

### General Summary

Surface reconnaissance of approximately 4000 acres in the Salt Creek Pocket Area resulted in the documentation of 101 sites and 66 IFs or an average of 0.025 sites and 0.017 IFs per acre. The sites recorded demonstrate that this area was inhabited by Archaic people during all three phases of the Archaic period, the Anasazi during Pueblo II and III, and Euroamericans during the historic period (Table 5). No Basketmaker or early Pueblo sites were found.

All three major site types are represented in the Salt Creek Pocket Area (Table 6). The majority of sites (n=57) are limited activity sites, followed by field camps (n=40) and habitation sites (n=6). Among the limited activity sites, secondary lithic reduction loci are the most common (n=31), followed by lithic procurement/primary and secondary lithic reduction (n=11) sites and primary and secondary lithic reduction (n=10). Overall, 20 components or 18.7% of the total sites and components reflect procurement of the lithic sources which are abundant in and around the Salt Creek Pocket Area. Seventeen of these are

Table 5. Frequency of sites and components in the Salt Creek Pocket Area by age and cultural affiliation.

Cultural Affiliation	Archaic	Anasazi	Aboriginal	Euroamerican	Total
Early Archaic	1	-	-	-	1
Middle Archaic	1	-	-	-	1
Late Archaic	1	-	-	-	1
Archaic	5	-	-	-	5
Pueblo II	-	4	-	-	4
Pueblo II-III	-	4	-	-	4
Pueblo III	-	3	-	-	3
Late Prehistoric	-	8	-	-	8
Prehistoric	-	-	76	-	76
Historic	-	-	-	4	4
Total	8	19	76	4	107

Table 6. Frequency of sites and components in the Salt Creek Pocket Area by cultural affiliation and functional type.

Site Type	Limited Activity Sites					Inde- terminate	Field Camps	Habitation Sites	Historic Sites	Total
	Lithic Procurement/ Primary Lithic Reduction Site	Lithic Procurement/ Primary and Secondary Lithic Reduction Site	Primary and Secondary Lithic Reduc- tion Site	Secondary Lithic Reduction Site	Communi- cation Site					
Archaic	-	-	-	1	1	-	4	2	-	8
Anasazi	-	1	-	4	-	-	12	2	-	19
Aboriginal	3	10	10	26	-	1	24	2	-	76
Euroamerican	-	-	-	-	-	-	-	-	4	4
Total	3	11	10	31	1	1	40	6	4	107

## SUMMARY OF CULTURAL RESOURCES

in the Salt Creek Pocket uplands away from the river.

Cultural affiliation of only seven of the limited activity sites could be determined; of these, two are Archaic and five are Anasazi. The remaining 50 could only be assigned to an aboriginal affiliation. Undoubtedly, many of these unassignable limited activity sites are the result of Archaic and Anasazi activities. Four of the field camps are ascribed an Archaic affiliation, 12 are Anasazi and 24 are undated but of aboriginal affiliation. Two habitation sites are Anasazi; two others are Archaic and two are of unknown cultural affiliation.

The inventory of cultural resources in the Salt Creek Pocket Area indicates that the focus of Archaic and Anasazi activities in this area was related to lithic procurement, lithic reduction, tool manufacture and plant processing. Hunting, for which there is indirect evidence in the form of projectile points, may also have been an important activity. Permanent, long-term occupation of the area appears to have been quite limited, if present at all, and there is very little evidence of horticultural activities. Therefore, it is assumed that the area was used on an intermittent basis during all periods of prehistoric occupation, primarily for resource exploitation. Historic use of the area was related to cattle ranching and mining was also intermittent.

The field observation that sites are clustered on and adjacent to sandstone outcrops in this area is substantiated by a review of the location data on the survey forms. These data reveal that 80 (79.2%) of the sites occur on or within 50 m of sandstone outcrops. Another seven (6.9%) of the sites are directly affiliated with falling dunes and nine (8.9%) with the Salt Creek drainage. Only five sites (5%) were located more than 50 m from a sandstone outcrop, and all of these are less than 100 m distant from sandstone. Approximately three-fourths of the total land surface in the survey area—mainly areas in the centers of the large coves—consists of deep sand deposits with no visible sites.

There is, however, a good possibility of buried sites in such areas (Larry Agenbroad, personal communication 1989).

The pinyon-juniper community also occurs near the sandstone outcrops, apparently because of the increased availability of moisture. The combination of a sheltering landform and a vegetation zone with numerous exploitable plants seems to have been an important site location factor for both Archaic and Anasazi groups.

The Archaic sites are primarily concentrated in the Salt Pocket uplands away from Salt Creek. The Anasazi sites are about evenly spread between the Salt Pocket uplands and lower Salt Creek drainage which is defined as a 400-m-wide corridor extending on either side of Salt Creek within the survey area.

## Environmental Correlates of Site Locations

by Nancy J. Hewitt

To identify the environmental factors that correlate with site location, we analyzed the environmental data encoded on the IMACS site forms. For this analysis, we tabulated seven variables that are believed to have been important to prehistoric hunters and gatherers and horticulturalists. These variables are secondary landform, primary vegetation type, elevation, aspect, slope, depositional environment and distance to permanent water. Primary landform was not considered because only one landform—tableland—was represented.

## Landforms

Some interesting patterns emerge when landform and site type are correlated (Table 7). The limited activity sites occur in the widest variety of landforms. This mixture of site locations is obviously related to differences in resource availability to which many of these sites are tied. Some types of limited activity sites are closely tied to certain landforms and cannot occur at other landform types. Rock art sites, for example,



Table 7. Correlation of site type and environmental factors in the Salt Creek Pocket Area.

Environmental Factor	Limited Activity Sites															
	Lithic Procurement/Primary Lithic Reduction Site		Lithic Procurement/Primary and Secondary Lithic Reduction Site		Primary and Secondary Lithic Reduction Site		Secondary Lithic Reduction Site		Communication Site		Indeterminate		Field Camps		Habitation Sites	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Shelter/Overhang	-	-	2	18.2	-	-	-	-	1	100.0	-	-	10	25.0	2	33.3
Basin	1	33.3	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Dune	-	-	-	-	-	-	4	12.9	-	-	-	-	2	5.0	-	6
Ledge	-	-	-	-	-	-	1	3.2	-	-	-	-	-	-	-	1
Mesa	-	-	-	-	-	-	2	6.5	-	-	-	-	-	-	-	2
Plain	-	-	-	-	1	10.0	-	-	-	-	-	-	1	2.5	-	2
Ridge/Knoll	-	-	3	27.3	3	30.0	6	19.4	-	-	-	-	3	7.5	-	15
Slope	1	33.3	1	9.1	-	-	4	12.9	-	-	-	-	2	5.0	-	8
Terrace/Bench	-	-	-	-	2	20.0	1	3.2	-	-	-	-	3	7.5	-	6
Valley	-	-	4	36.4	4	40.0	9	29.0	-	-	1	100.0	8	20.0	1	28
Outcrop	-	-	1	9.1	-	-	1	3.2	-	-	-	-	7	17.5	1	11
Cliff	1	33.3	-	-	-	-	2	6.5	-	-	-	-	3	7.5	1	7
Detached monolith	-	-	-	-	-	-	1	3.2	-	-	-	-	-	-	-	3
Floodplain	-	-	-	-	-	-	-	-	-	-	-	-	1	2.5	-	1
Pinyon-juniper	3	100.0	6	54.5	3	30.0	13	41.9	1	100.0	1	100.0	22	55.0	2	55
Desert scrub	-	-	5	45.5	7	70.0	16	51.6	-	-	-	-	16	40.0	4	48
Grassland	-	-	-	-	-	-	2	6.5	-	-	-	-	1	2.5	-	3
Barren	-	-	-	-	-	-	-	-	-	-	-	-	1	2.5	-	1
Colluvium	-	-	1	9.1	-	-	1	3.2	-	-	-	-	1	2.5	-	3
Outcrop	2	66.6	3	27.3	-	-	1	3.2	-	-	-	-	17	42.5	3	27
Eolian	1	33.3	7	63.6	9	90.0	27	87.1	1	100.0	-	-	19	47.5	3	69
Residual	-	-	-	-	1	10.0	2	6.5	-	-	1	100.0	2	5.0	1	7
Floodplain	-	-	-	-	-	-	-	-	-	-	-	-	1	2.5	-	1

Table 7. Correlation of site type and environmental factors in the Salt Creek Pocket Area (continued).

Environmental Factor	Limited Activity Sites																			
	Lithic Procurement/ Primary Lithic Reduction Site		Lithic Procurement/ Primary and Secondary Lithic Reduc- tion Site		Primary and Secondary Lithic Reduction Site		Secondary Lithic Reduction Site		Communica- tion Site		Inde- terminate		Field Camps		Habitation Sites		Historic Sites		Tbtal	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Elevation (ft)																				
Mean	5060.00	-	5154.55	-	5026.00	-	5048.71	-	5100.00	-	5180.00	-	4992.50	-	5036.67	-	4992.50	-	-	-
Standard deviation	80.00	-	273.22	-	84.09	-	270.53	-	-	-	-	-	177.93	-	57.15	-	49.92	-	-	-
Aspect																				
Mean	314.00*	-	264.18*	-	250.40*	-	251.16*	-	220.00*	-	180.00*	-	217.83*	-	245.00*	-	310.00*	-	-	-
Standard deviation	54.37*	-	71.72*	-	69.60*	-	108.72*	-	-	-	-	-	113.39*	-	83.37*	-	87.18*	-	-	-
Slope																				
Mean	4.00*	-	7.91*	-	3.20*	-	4.68*	-	4.00*	-	1.00*	-	3.90*	-	4.83*	-	2.75*	-	-	-
Standard deviation	3.61*	-	12.64*	-	1.55*	-	5.50*	-	-	-	-	-	2.91*	-	4.17*	-	1.71*	-	-	-
Distance to permanent water (m)																				
Mean	1950.00	-	1681.82	-	1722.00	-	1800.32	-	1680.00	-	1960.00	-	1240.75	-	1846.67	-	942.50	-	-	-
Standard deviation	1430.91	-	1089.55	-	1179.10	-	1157.18	-	-	-	-	-	1093.49	-	1113.64	-	801.35	-	-	-

are found where suitable rock faces are available; therefore they cannot occur in dunes. Lithic resource procurement sites are located where appropriate materials occur naturally and are accessible.

Other limited activity sites are not as closely tied to the resources provided by the landforms. Secondary lithic reduction sites, which are a result of tool manufacturing and/or sharpening, could theoretically occur near any landform. Table 7 shows that sites of this type occur on the widest variety of landforms of all limited activity sites. However, the majority of these sites occur in open areas or on promontories—areas that afford a view of the surrounding area. These sites might be the result of hunters manufacturing, sharpening or reworking tools while watching for game or getting a cool breeze in the summer.

Field camps also occur on a wide variety of landforms, but approximately half are located in some kind of protected area. In addition to the 10 field camps located in overhangs, 3 field camps are very close to cliff walls and 7 others are near outcrops. Two habitation sites are located in overhangs; two others are near detached monoliths and one is adjacent to an outcrop. The other habitation site is located in the open. Little can be said about the location of the habitations, though it appears that protected areas were also preferred. Overall, the most common landform category is valley, comprising 26.2% of the total; this is not surprising given that about three-fourths of the survey area consists of open valleys or coves. Next most common are shelters comprising 15% and ridges/knolls accounting for 14%.

Correlation of landforms with different cultural groups is somewhat tenuous because so many sites could not be placed in a cultural framework. However, there appear to be some general tendencies. Eight sites were identified as Archaic; of these, six are located in protected areas such as shelters or near cliffs and detached monoliths. Anasazi sites also show a tendency to

occur in protected areas (Table 8). Six of 19 Anasazi sites and components are in shelters, and 5 others are near outcrops or cliff faces.

### Depositional Environment

Table 7 shows that the majority (64.5%) of all site types are associated with eolian sediments, the dominant surficial material exposed in the Salt Creek Pocket Area. This sediment is dry, sandy and probably not arable. Another interesting pattern is that more than 85% of the non-procurement lithic reduction sites are associated with eolian deposits, whereas only about 60% of the sites where lithic procurement was undertaken occur in eolian settings. Field camps are usually associated with eolian deposits or barren slickrock but occur in all depositional settings. The habitation sites also correlate with eolian sands and sandstone outcrops. These categories are also the most common among all cultural groups. Also worthy of note is that no Anasazi sites are associated with the well-watered alluvial sediments along the Salt Creek floodplain (Table 8).

### Vegetation

Pinyon-juniper woodlands and the desert scrub community are the most common primary vegetation categories for all site types and for all cultures. Table 7 shows some interesting patterns. For example, more than 54% of the lithic procurement sites occur in the pinyon-juniper woodland compared to less than 42% of the non-procurement lithic reduction sites. The nonprocurement lithic reduction sites more often occur in the desert scrub. While this difference may be due to the small sample size, it warrants further investigation when a larger sample is available.

### Elevation

Within the Salt Creek Pocket Area, sites range in elevation from 4860 to 5960 ft. Field camps tend to occur at slightly lower elevations than other types

## SUMMARY OF CULTURAL RESOURCES

Table 8. Correlation of cultural affiliation and environmental factors in the Salt Creek Pocket Area.

Environmental Factor	Archaic		Anasazi		Aboriginal	
	n	%	n	%	n	%
Shelter/Overhang	1	12.5	6	31.6	8	10.5
Basin	-	-	-	-	1	1.3
Dune	-	-	1	5.3	5	6.6
Ledge	-	-	-	-	1	1.3
Mesa	-	-	1	5.3	1	1.3
Plain	-	-	-	-	2	2.6
Ridge/Knoll	-	-	1	5.3	14	18.4
Slope	-	-	-	-	8	10.5
Terrace/Bench	-	-	3	15.8	3	3.9
Valley	2	25.0	2	10.5	23	30.3
Outcrop	-	-	4	21.1	6	7.9
Cliff	3	37.5	1	5.3	2	2.6
Detached monolith	2	25.0	-	-	1	1.3
Floodplain	-	-	-	-	1	1.3
Pinyon-juniper	6	75.0	10	52.6	35	46.1
Desert scrub	2	25.0	9	47.4	37	48.7
Grass	-	-	-	-	3	3.9
Barren	-	-	-	-	1	1.3
Colluvium	1	12.5	-	-	2	2.6
Outcrop	3	37.5	9	47.4	14	18.4
Eolian	3	37.5	9	47.4	55	72.4
Residual	1	12.5	1	5.3	4	5.3
Floodplain	-	-	-	-	1	1.3
Elevation (ft)						
Mean	5080.00	-	5037.37	-	5038.89	-
Standard deviation	65.90	-	73.62	-	241.89	-
Aspect						
Mean	200.00°	-	213.37°	-	250.88°	-
Standard deviation	86.02°	-	112.05°	-	98.67°	-
Slope						
Mean	3.00°	-	4.84°	-	4.61°	-
Standard deviation	2.45°	-	3.75°	-	6.14°	-
Distance to permanent water (m)						
Mean	1996.25	-	1705.79	-	1491.45	-
Standard deviation	935.96	-	1313.88	-	1091.86	-

## SUMMARY OF CULTURAL RESOURCES

Table 8. Correlation of cultural affiliation and environmental factors in the Salt Creek Pocket Area (continued).

Environmental Factor	Euroamerican		Total	
	n	%	n	%
Shelter/Overhang	1	25.0	16	15.0
Basin	-	-	1	0.9
Dune	-	-	6	5.6
Ledge	-	-	1	0.9
Mesa	-	-	2	1.9
Plain	-	-	2	1.9
Ridge/Knoll	-	-	15	14.0
Slope	-	-	8	7.5
Terrace/Bench	-	-	6	5.6
Valley	1	25.0	28	26.2
Outcrop	1	25.0	11	10.3
Cliff	1	25.0	7	6.5
Detached monolith	-	-	3	2.8
Floodplain	-	-	1	0.9
Pinyon-juniper	4	100.0	55	51.4
Desert scrub	-	-	48	44.9
Grass	-	-	3	2.8
Barren	-	-	1	0.9
Colluvium	-	-	3	2.8
Outcrop	1	25.0	27	25.2
Eolian	2	50.0	69	64.5
Residual	1	25.0	7	6.5
Floodplain	-	-	1	0.9
Elevation (ft)				
Mean	4992.50	-	-	-
Standard deviation	49.92	-	-	-
Aspect				
Mean	310.00°	-	-	-
Standard deviation	87.18°	-	-	-
Slope				
Mean	2.75°	-	-	-
Standard deviation	1.71°	-	-	-
Distance to permanent water (m)				
Mean	942.50	-	-	-
Standard deviation	801.35	-	-	-

of prehistoric sites, whereas lithic resource sites and rock art sites tend to occur at slightly higher elevations. Historic sites are located at slightly lower elevations than the prehistoric sites.

### Aspect and Slope

Relatively flat terrain seems to have been preferred for all site types, although lithic procurement/primary and secondary lithic reduction sites are located on slightly steeper ground than other sites, probably because they are restricted to areas where lithic material outcrops. Anasazi sites tend to be in slightly steeper locales than Archaic sites and prehistoric sites of unknown affiliation. Mean aspect of the sites varies only slightly between types with most sites oriented more or less west or southwest.

### Distance to Permanent Water

The permanent water supply in this area of the Needles District is Salt Creek. The survey crew observed one small spring near site 42SA17147, and there are many bedrock potholes that hold water for short periods during the rainy season. But in general, the Salt Creek Pocket Area is very dry, and this aridity may be one reason that only six small habitation sites are found in this area. Surprisingly, however, the habitation sites are, on the average, located farther from permanent water than other site types. On the average, field camps are closer to permanent water than other types of sites.

Distance to permanent water also seems to vary between temporal periods. Anasazi sites are on the average closer to Salt Creek than Archaic sites. Euroamerican sites are closer to water than sites of any other time period. Since all of the historic sites contain cattle holding pens, their proximity to water is understandable.

## Devils Lane Area

### General Summary

Pedestrian survey of approximately 500 acres in the Devils Lane Area resulted in the documentation of 41 sites and 10 IFs or an average of 0.082 sites and 0.020 isolated finds per acre. Sites recorded indicate that this portion of the Needles District was occupied by Archaic, Basketmaker, Anasazi, Euroamerican and possibly Fremont groups (Table 9). Time periods represented include Late Archaic, Archaic, Basketmaker III-Pueblo I, Pueblo I, Pueblo I-II, Pueblo II-III, Pueblo III, Late Prehistoric and Historic. Like the Salt Creek Pocket Area, Archaic sites and sites dating to Pueblo II-III are the most common.

The lack of Early and Middle Archaic sites is interesting given that such sites are present in the Salt Creek Pocket Area, but may simply be the result of sampling error given the small amount of acreage and low number of sites. More survey is needed. The discovery of Basketmaker III-Pueblo I, Pueblo I and Pueblo I-II sites is particularly exciting given the general lack of evidence for such sites in existing literature.

All three major site types are represented in the Devils Lane Area. The majority of the sites and components are limited activity loci (n=22) and field camps (n=18), with only a few habitation sites (n=5) and one Euroamerican site identified (Table 10). Among the limited activity sites, rock art communication sites are the most common accounting for 45.5%. Secondary lithic reduction sites and primary and secondary lithic reduction sites make up the remainder. No sites which included lithic procurement activities were located because no chert sources appear to be present.

Among the Archaic sites, communication sites are the most common with only one field camp and one habitation site identified. Field camps predominate among the Anasazi sites, with fewer limited activity and habitation sites identified. The

Table 9. Frequency of sites and components in the Devils Lane Area by age and cultural affiliation.

Cultural Affiliation	Archaic	Basketmaker/Anasazi	Fremont	Aboriginal	Euroamerican	Total
Late Archaic	1	-	-	-	-	1
Archaic	6	-	-	-	-	6
Basketmaker III-Pueblo I	-	1	-	-	-	1
Pueblo I	-	-	1	-	-	1
Pueblo I-II	-	-	1	-	-	1
Pueblo II-III	-	-	10	-	-	10
Pueblo III	-	-	2	-	-	2
Late Prehistoric	-	-	5	1	-	6
Prehistoric	-	-	-	-	17	17
Historic	-	-	-	-	1	1
Total	7	1	19	1	17	46

Table 10. Frequency of sites and components in the Devils Lane Area by cultural affiliation and functional type.

Site Type	Limited Activity Sites		Field Camps	Habitation Sites	Historic Sites	Total
	Primary and Secondary Lithic Reduction	Lithic Reduction Site				
Archaic	-	-	5	1	-	7
Basketmaker/Anasazi	-	-	-	1	-	1
Anasazi	-	1	4	10	4	19
Fremont	-	-	1	-	-	1
Aboriginal	5	6	-	6	-	17
Euroamerican	-	-	-	-	1	1
Total	5	7	10	18	5	46

single "Fremont" component consists of rock art, whereas the Basketmaker/Anasazi site is a field camp.

The Archaic sites are primarily located in the Devils Lane graben, with only one Archaic site on Butler Flat and no Archaic sites in Chesler Canyon Wash, the only other major geographic section of the Devils Lane Area. In contrast, Anasazi

sites are about evenly spread between Devils Lane and Chesler Canyon Wash, with only one Anasazi site on Butler Flat. Interestingly, too, all three of the early Anasazi sites—one Basketmaker III-Pueblo I, one Pueblo I and one Pueblo I-II—are clustered in overhangs along Chesler Canyon Wash.

## SUMMARY OF CULTURAL RESOURCES

Sites in the Devils Lane Area appear to be cliff and overhang oriented and primarily the result of limited use of the area. No large habitations were observed and the few small habitations recorded, with one exception, are clustered south of the Devil Lane graben on Butler Flat or in Chesler Canyon Wash. Ten of the 18 field camps are also found in this area. This location was obviously preferred when an extended stay was required.

Within the graben, sites are primarily rock art panels on the cliff faces with few sites on the graben floor. Site types and artifacts found in this area suggest that this portion of the Needles District was exploited by Archaic and Anasazi groups on an intermittent basis.

### Environmental Correlates of Site Locations

by Nancy J. Hewitt

Environmental variables correlated with site type and cultural affiliation are given in Tables 11 and 12. These are the same variables that were used to analyze site location patterns in the Salt Creek Pocket Area.

#### Landforms

There appear to be a few discernible patterns when site type is correlated with landform. Lithic reduction sites occur on a widest variety of landforms. Field camps consistently occur in protected areas such as overhangs but are also found on a variety of other land forms. Habitation sites occur in overhangs and in the open on mesas, ridges and knolls. Anasazi sites frequently occur in overhangs, whereas Archaic sites do not.

#### Depositional Environment

Half of all sites and components are located on eolian sediments, one of the primary surficial deposits in this area. Half of the field camps are associated with eolian deposits whereas the other half are

approximately evenly split between outcrops and residual deposits. Habitation sites are also associated with eolian sands and residual deposits. The limited activity sites show the widest range of depositional types with secondary lithic reduction sites occurring exclusively in eolian settings, primary and secondary lithic reduction sites occurring on eolian or residual deposits or sandstone outcrops, and communication sites being found on outcrops and talus boulders.

Archaic sites are more commonly associated with outcrops than other deposits, whereas the indeterminate aboriginal sites more are usually associated with eolian deposits. The Anasazi sites are about equally spread between outcrops, eolian sands and residual deposits. The single Basket-maker/Anasazi site is associated with residual deposits in an overhang and the "Fremont" component, consisting solely of rock art, is found on an outcrop in a low shelter.

#### Vegetation

Vegetation throughout the Devils Lane Area is sparse and consists mainly of low shrubs. Pinyon and juniper occur in protected areas against the cliffs. Therefore, it may be significant that the primary vegetation type recorded on more than half (52.2%) of all sites is pinyon-juniper woodlands. Lithic reduction sites and rock art sites are the only site types that are not predominantly located in this vegetation community. The Anasazi sites are associated with pinyon-juniper vegetation more often than not. The Archaic sites are associated with desert scrub vegetation or devoid of vegetation as often as they are associated with pinyon-juniper.

#### Elevation

Although there is considerable elevational variation in the Devils Lane graben, survey within this area was conducted from cliff face to cliff face (i.e., the graben floor) and the flatter areas of Butler Flat.

Table 11. Correlation of site type and environmental factors in the Devils Lane Area.

Environmental Factor	Limited Activity Sites												Total	
	Primary and Secondary Lithic Reduction Site		Secondary Lithic Reduc- tion Site		Communi- cation Site		Field Camps		Habitation Sites		Historic Sites			
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Shelter/Overhang	-	-	-	-	-	-	8	44.4	2	40.0	-	-	10	21.7
Basin	-	-	-	-	-	-	1	5.6	-	-	-	-	1	2.2
Mesa	2	40.0	3	42.9	-	-	2	11.1	2	40.0	-	-	9	19.6
Ridge/Knoll	1	20.0	2	28.6	-	-	1	5.6	1	20.0	-	-	5	10.9
Slope	1	20.0	-	-	-	-	-	-	-	-	-	-	1	2.2
Terrace/Bench	-	-	1	14.3	-	-	1	5.6	-	-	-	-	2	4.3
Valley	-	-	-	-	-	-	-	-	-	-	1	100.0	1	2.2
Outcrop	1	20.0	-	-	6	60.0	5	27.8	-	-	-	-	12	26.1
Cliff	-	-	-	-	4	40.0	-	-	-	-	-	-	4	8.7
Detached monolith	-	-	1	14.3	-	-	-	-	-	-	-	-	1	2.2
Pinyon-juniper	1	20.0	2	28.6	2	20.0	14	77.8	4	80.0	1	100.0	24	52.2
Desert scrub	4	80.0	3	42.9	5	50.0	4	22.2	-	-	-	-	16	34.8
Grassland	-	-	1	14.3	-	-	-	-	-	-	-	-	1	2.2
Barren	-	-	1	14.3	3	30.0	-	-	1	20.0	-	-	5	10.9
Talus	-	-	-	-	1	10.0	-	-	-	-	-	-	1	2.2
Outcrop	1	20.0	-	-	9	90.0	4	22.2	-	-	-	-	14	30.4
Eolian	3	60.0	7	100.0	-	-	9	50.0	3	60.0	1	100.0	23	50.0
Residual	1	20.0	-	-	-	-	5	27.8	2	40.0	-	-	8	17.4
Elevation (ft)														
Mean	5200.00	-	5222.86	-	5164.50	-	5187.78	-	5232.00	-	5281.00	-	-	-
Standard deviation	56.57	-	60.47	-	58.33	-	57.86	-	43.82	-	-	-	-	-
Aspect														
Mean	225.20°	-	173.43°	-	169.00°	-	248.22°	-	98.20°	-	310.00°	-	-	-
Standard deviation	117.95°	-	115.16°	-	78.52°	-	90.41°	-	102.13°	-	-	-	-	-
Slope														
Mean	3.40°	-	3.86°	-	6.60°	-	5.72°	-	3.20°	-	4.00°	-	-	-
Standard deviation	2.07°	-	2.97°	-	12.04°	-	6.45°	-	2.05°	-	-	-	-	-
Distance to permanent water (m)														
Mean	4642.00	-	4861.43	-	4572.00	-	4313.89	-	4530.00	-	4950.00	-	-	-
Standard deviation	383.76	-	283.99	-	248.27	-	431.62	-	197.10	-	-	-	-	-



Table 12. Correlation of cultural affiliation and environmental factors in the Devils Lane Area.

Environmental Factor	Archaic		Basketmaker/Anasazi		Anasazi		Fremont		Aboriginal		Euroamerican		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Shelter/Overhang	-	-	1	100.0	9	47.4	-	-	-	-	-	-	10	21.7
Basin	-	-	-	-	-	-	-	-	1	5.9	-	-	1	2.2
Mesa	1	14.3	-	-	1	5.3	-	-	7	41.2	-	-	9	19.6
Ridge/Knoll	-	-	-	-	1	5.3	-	-	4	23.5	-	-	5	10.9
Slope	-	-	-	-	-	-	-	-	1	5.9	-	-	1	2.2
Terrace/Bench	-	-	-	-	1	5.3	-	-	1	5.9	-	-	2	4.3
Valley	-	-	-	-	-	-	-	-	-	-	1	100.0	1	2.2
Outcrop	4	57.1	-	-	4	21.0	1	100.0	3	17.6	-	-	12	26.1
Cliff	2	28.6	-	-	2	10.5	-	-	-	-	-	-	4	8.7
Detached monolith	-	-	-	-	1	5.3	-	-	-	-	-	-	1	2.2
Pinyon-juniper	3	42.9	1	100.0	13	68.4	-	-	6	35.3	1	100.0	24	52.2
Desert scrub	2	28.6	-	-	3	15.8	1	100.0	10	58.8	-	-	16	34.8
Grass	-	-	-	-	-	-	-	-	1	5.9	-	-	1	2.2
Barren	2	28.6	-	-	3	15.8	-	-	-	-	-	-	5	10.9
Talus	1	14.3	-	-	-	-	-	-	-	-	-	-	1	2.2
Outcrop	5	71.4	-	-	7	36.8	1	100.0	1	5.9	-	-	14	30.4
Eolian	1	14.3	-	-	6	31.6	-	-	15	88.2	1	100.0	23	50.0
Residual	-	-	1	100.0	6	31.6	-	-	1	5.9	-	-	8	17.4
Elevation (ft)														
Mean	5187.57	-	5200.00	-	5193.68	-	5080.00	-	5205.88	-	5281.00	-	-	-
Standard deviation	64.98	-	-	-	53.77	-	-	-	60.73	-	-	-	-	-
Aspect														
Mean	167.14°	-	190.00°	-	193.63°	-	110.00°	-	225.88°	-	310.00°	-	-	-
Standard deviation	114.56°	-	-	-	93.33°	-	-	-	117.08°	-	-	-	-	-
Slope														
Mean	6.29°	-	2.00°	-	5.58°	-	1.00°	-	4.47°	-	4.00°	-	-	-
Standard deviation	12.31°	-	-	-	7.86°	-	-	-	2.53°	-	-	-	-	-
Distance to permanent water (m)														
Mean	4424.29	-	4360.00	-	4525.26	-	4710.00	-	4543.53	-	4950.00	-	-	-
Standard deviation	303.58	-	-	-	366.48	-	-	-	469.48	-	-	-	-	-

Sites within this surveyed area range in elevation from 5040 to 5281 ft. No locational patterns related to elevation are readily apparent.

### Aspect and Slope

Habitation sites tend to occur on flatter ground than field camps and limited activity sites. Lithic reduction sites occur on flatter ground than the field camps whereas communication sites are routinely found on steep terrain. Archaic sites tend to be located on slightly steeper ground than the Anasazi sites.

Rock art panels and secondary lithic reduction sites are oriented in a southerly direction, whereas field camps and primary and secondary lithic reduction sites face southwest. The habitation sites have an average easterly exposure.

### Distance to Permanent Water

Tables 11 and 12 show the average distance of sites in the Devils Lane Area to the nearest permanent water source—the Colorado River. However, these distances are probably irrelevant as access to the river from this area would entail crossing numerous grabens, scaling sheer 800-ft or higher cliffs to reach the river, then returning via the same route carrying containers full of water; not a very feasible prospect. In terms of access, Salt Creek is actually closer to these sites, but it would entail a hike of more than 15 km one way. Although no springs were observed in the survey area, there is a spring in Cyclone Canyon about 2 km west of Devils Lane; Soda Springs near Elephant Hill is about 5 km to the east, and an unnamed spring at the north end of Devils Pocket is about 2 km to the east.

### Comparisons of Sites in the Two Survey Areas

Comparisons of site densities in the two survey areas reveal that sites are

about four times more common in the Devils Lane Area than in the Salt Creek Pocket Area. Isolated find frequencies are relatively equal. The lower density of sites in the Salt Creek Pocket Area may be related to natural processes such as sand accumulating and burying sites in the middles of the large pockets, but this cannot be determined with the available data and more work is required.

One major difference between the two areas is the lack of lithic source area sites in the Devils Lane Area. In contrast, 20 sites with lithic resources were recorded in the Salt Creek Pocket Area. This difference is probably due to the absence of lag and easily obtainable cherts in the Devils Lane Area. In fact, only one possible source of lithic material was noted in the Devils Lane Area, but it consisted of nodular inclusions tightly bound in the vertical sandstone walls.

The difference in rock art sites between the two areas is of particular interest. Seven rock art sites (10 components) were recorded in the Devils Lane Area and one rock art site was recorded in the Salt Creek Pocket Area. However, there are other types of sites in both survey areas that have rock art panels. If these sites are included, then nine sites (12 components) with rock art were recorded in the Devils Lane Area, and eight (9 components) in the Salt Creek Pocket Area. Even when all sites are included, rock art is more abundant in Devils Lane. This difference cannot be accounted for in terms of availability of appropriate rock surfaces for rock art since both areas have an abundance of unused surfaces.

During the survey, it was noted that none of the rock art was hidden from view and that numerous sites exhibiting rock art occurred in association with passageways. In the Devils Lane Area, these sites occur in the graben which forms a natural north-east to southwest passage through the western area of the Needles District. The abundance of panels in this area may indicate that it was a major passageway for

groups moving through this area. In Salt Creek Pocket, many of the rock art sites are near the falling dunes that could have provided access between small pockets in the area. An information-bearing function for these features is suggested although the content and meaning of the art is not readily apparent.

Another difference between the two areas is that rock art in the Salt Creek Pocket Area is usually associated with camps whereas rock art in Devils Lane is primarily limited to isolated panels not associated with evidence of domestic activities. This difference cannot be explained in terms of the type of rock art displayed. For example, Barrier Canyon Style rock art panels occur in both areas. This style is not associated with other evidence of human occupation in the Devils Lane Area, but in the Salt Creek Pocket Area, two of the four Barrier Canyon Style panels are associated with more substantial sites, a field camp and a habitation site. While it is possible that the field camp and habitation site represent later occupations, surface evidence at both sites indicates an Archaic time period consistent with the time period postulated for this style of rock art. Obviously, there are many unanswered questions about rock art, and excavation of these sites in the Salt Creek Pocket Area might help address them.

Anasazi habitation sites are relatively rare in the Salt Creek Pocket Area despite its location near Salt Creek. This lack may in part reflect the overall paucity of available overhang locations in the generally rounded bedrock topography of the survey area. A cursory review of Anasazi habitations in other nearby areas (e.g., Salt Creek Archaeological District, Davis and Lavender canyons) indicates that rockshelters and alcoves are the preferred location for Anasazi habitations and storage structures. As one moves southward along Salt Creek, Anasazi structures rapidly increase in abundance concurrent with an increase in the abundance of alcoves and arable land.

In contrast to the Salt Creek Pocket Area, Anasazi habitation sites are slightly more common in the Devils Lane Area where they are located in shelters in Devils Lane or overhangs overlooking Chesler Canyon Wash which marks the northern end of Butler Flat.

It is difficult to determine what factors besides appropriate natural shelters were responsible for determining location of the Anasazi sites. Both survey areas are quite dry and the surface deposits are primarily eolian sands which do not appear to be particularly fertile. The Devils Lane Area has no permanent water supply, and Anasazi sites are absent along the Salt Creek in the Salt Creek Pocket Area where water and alluvial soils are available. Vegetal resources might have been an important factor, and many one-hand manos and metates which are assumed to have been used in plant processing were associated with these sites. However, this is a problem that requires a more detailed study.

In terms of cultural affiliation, there is a higher percentage of sites identifiable to affiliation in the Devils Lane Area, and as such, a higher percentage of Archaic sites and Anasazi sites. There are also Fremont and Basketmaker/Anasazi sites which are lacking in the Salt Creek Pocket Area. The higher percentage of Archaic and Anasazi sites in the Devils Lane Area may be artificial because the low number of such sites in the Salt Creek Pocket Area is caused by the high percentage (71%) of indeterminate aboriginal sites and components in that area. Evidence of historical cattle ranching is found in both areas. However, historic mining remains are not found in the Devils Lane Area; several were noted in the Salt Creek Pocket Area. Also, the sporadic historical trash deposits on prehistoric sites which were found in the Salt Creek Pocket Area are completely lacking in the Devils Lane Area.

In summary, the two data sets reveal basic similarities in site types and cultural affiliations, with the major difference being site densities. The most outstanding

#### SUMMARY OF CULTURAL RESOURCES

differences are the lack of quarry sites, the abundance of rock art sites and the presence of early Anasazi sites in the Devils Lane Area.

## Chapter 6

# SUMMARY OF THE ARTIFACTS AND FEATURES

by Betsy L. Tipps, Nancy J. Hewitt and William A. Lucius

### Artifacts

by Betsy L. Tipps

The artifactual assemblage recorded during the project includes 316 chipped stone tools, 141 pecked stone and groundstone tools, 114 sherds and 3 whole vessels. The chipped stone tool assemblage is composed of 49 projectile points, 248 bifaces, 2 drills, 2 choppers, 13 unifaces/scrapers and 2 gravers. Pecked stone and groundstone tools include 34 hammerstones, 67 manos, 39 metates and 1 maul. Debitage is estimated at a minimum of 100,000 pieces, but the total is probably much higher. A total of 78 cores and 11 blades were also found. The vast majority of these artifacts were found on sites; only 28 chipped stone and groundstone tools, 128 pieces ofdebitage, 3 ceramic vessels and an associated sherd were recorded as isolated finds.

The noncollection policy of the National Park Service precluded detailed analyses of the artifacts. But, significant discussions can still be made about the artifact assemblages observed during the survey based on the field descriptions, drawings and other data from the site forms. The remainder of this section describes the tools and artifacts, and provides comparisons as appropriate.

### Chipped Stone Artifacts

A wide variety of chipped stone artifacts was observed during the project ranging fromdebitage and blades, to expedient tools, to formal tools such as finely flaked projectile points and bifaces that were probably used as knives. The vast majority of these artifacts are made from locally available chert derived from the Cedar Mesa Formation, though other local and nonlocal material types are also present in the assemblage. Preliminary information on the lithic material types is presented prior to describing the lithic assemblage.

### Lithic Materials

Knowledge of lithic source location and the strategies used to procure raw lithic materials are important to understanding how prehistoric settlement, subsistence and trade systems operated and how prehistoric peoples interacted with the environment. Because each of these topics is a subject of investigation specified in the research design, an attempt was made to identify discrete chipped stone material types and determine their provenance. Material designations were determined through visual inspection of color, luster, texture and inclusions. These designations are necessarily preliminary and need to be

verified through rigorous laboratory analyses.

An attempt was made to ascertain the provenance of each material type through direct observation, published information, knowledge of local geologic formations and in-field observations regarding types of flakes present, cortex amount and cortex type. Although the in-field observations did not always provide specific information on source location, they did reveal information on the relative distance to source and the form of the raw material; such information will ultimately be useful in identifying sources as more data accumulates.

The main material type observed during the survey is red chert and varieties thereof. Most sites also exhibit other materials such as clear-white chalcodony, yellow-brown algalitic chert, and various other cherts, quartzites and chalcodonies. Based on the fieldwork and subsequent research, geologic sources have been tentatively identified for the red chert and clear-white chalcodony: the former derives from the Cedar Mesa Sandstone. The latter apparently comes from the Summerville Formation. Because these siliceous materials do not outcrop in every location that these formations occur, possible source areas—the actual location where the raw material was collected from the formation—have also been identified as shown in Figure 12.

Another common material, algalitic chert, is a distinctive type, readily identified in the field. Its geologic origin is unknown, though a possible source area was identified in Devils Lane graben. The other materials discovered during the survey could not be assigned to names, types or specific source localities, but are briefly described after summarizing the named types.

#### Cedar Mesa Chert

The Cedar Mesa Formation is composed of white, fine-grained, well-sorted sandstone that was deposited during the Permian period as part of the Cutler Group. It occurs across much of southeastern Utah, extending from a north-south

line that lies approximately 10 to 20 mi west of Moab, Monticello and Blanding, Utah, south and west to Kayenta, Arizona, Grand Canyon National Park, and Kanab and Panguitch, Utah (Baars 1983). Within the Salt Creek Pocket Area, this sandstone formation contains discontinuous bands of chert which are generally of high quality. These chert beds range up to 30 cm thick and erode and fracture into cobble size pieces which are suitable for chipped stone tool manufacture. Though the veins are only found in a limited number of locations in the Salt Creek Pocket Area, this chert occurs widely in the Salt Creek Pocket Area in lag deposits left when the less resistant overlying sandstone weathered away. Most lag deposits discovered during the survey had been subjected to considerable use, as evidenced by their associations with extensive lithic scatters.

Two main variations of this chert are present within the lag deposits in the Salt Creek Pocket Area. The most common is a high-quality, blood red chert with a waxy surface. Inclusions and fracture planes are uncommon. The second type, present in lesser quantities, is a waxy, creamy red, mottled chert with blocky flaking characteristics. Cedar Mesa Chert has a cryptocrystalline to microcrystalline structure and fractures conchoidally. Sharrock (1966:64) notes that this material occasionally grades into brown and white in the Salt Creek area. It is difficult to ascertain whether Sharrock's "brown" refers to the reddish brown shades of this material occasionally observed in the lag deposits, or an entirely different shade such as chocolate brown or dark brown. However, large chunks of white chert shatter were observed on one Cedar Mesa Chert source area, site 42SA17166, in the Salt Creek Pocket Area indicating that this material grades into white. Both yellow and white varieties are suggested by one red-white and eight red-cream cores found in the Salt Creek Pocket Area.

Around Squaw Butte, which lies a few kilometers west of the Salt Creek Pocket

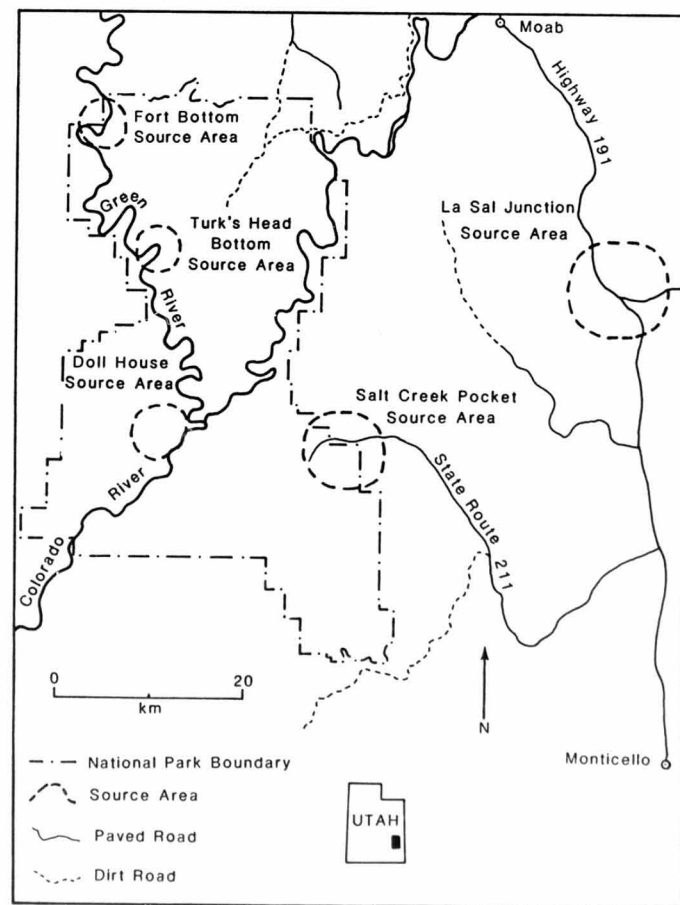


Figure 12. Locations of known lithic resource areas in the Canyonlands area.

Survey Area, the 1988 survey discovered that Cedar Mesa Chert grades into yellow (very pale brown, 10YR8/3) and orange (5YR6/6, reddish yellow) varieties which have a definite limey composition. It is because of these limey varieties that we propose that the source be termed a chert rather than a jasper. More work is clearly needed to fully define the variation of this important and widespread lithic source.

Outcrops and lag deposits of this chert source were not identified in the Devils Lane Area despite the outcropping Cedar Mesa Sandstone, indicating that the chert band does not occur everywhere that the Cedar Mesa Sandstone outcrops. Therefore, the band is either limited in horizontal extent, only present at a certain level within the formation that is not always exposed at the surface, or both. For this reason, we have identified the Salt Pocket Source Area (Figure 12) to denote the location within the Cedar Mesa Sandstone where most of the red chert material found in the project area was obtained. Losee and Lucius (1976:33) observed the same chert outcropping from the [Cedar Mesa Sandstone member of the] Cutler group in the Doll House area of the Maze. We propose that area be designated the Doll House Source Area (Figure 12). With further research, more source areas will no doubt be identified.

As might be expected given the high quality and availability of this material, the majority of lithic artifacts observed in the Salt Creek Pocket Area are made from Cedar Mesa Chert. Red chert predominates on more than 80% of the sites. The quality of stone in the lag deposits in the Salt Pocket Area varies, and it may be that many of the higher quality nodules have been removed and processed, leaving the less attractive materials behind. Further, the creamy red mottled chert is comparatively rare in lag form, which correlates with its lesser occurrence on sites in the Salt Creek Pocket Area. Even though Cedar Mesa Chert does not outcrop in the Devils Lane Area, it is one of main

materials on about 30% of the sites and occasionally constitutes the majority of material at a given site.

#### Summerville Chalcedony

The Summerville Formation is composed of thin, horizontal beds of chocolate-colored siltstones and mudstones and occasional beds of white sand. It was deposited in tidal-flat conditions during the Late Jurassic period. The Summerville Formation is widely distributed in the San Rafael Swell but also outcrops in parts of southeastern Utah (Baars 1983).

This formation contains a predominantly clear to milky white chalcedony with excellent flaking characteristics. The material is cryptocrystalline, homogeneous and occasionally contains areas of light translucent orange coloring. The closest known outcrops of the Summerville Formation are found in the vicinity of La Sal Junction and extending south of Deerneck Mesa, on the slopes of the Abajo Mountains, northwest of Moab around Courthouse Wash and extending south along the east side of Comb Ridge (Hintze 1980; Huntoon et al. 1982). In the vicinity of La Sal Junction, this distinctive material occurs as lag nodules from the now-eroded Summerville Formation. The location of this source area is shown in Figure 12.

In the Salt Creek Pocket Area, Summerville Chalcedony is one of the main materials on about 15% of the sites and occurs in small amounts on another 45% of the sites. It is occasionally the most common material. Summerville Chalcedony is one of the primarily materials on only two sites in the Devils Lane Area, but occurs in small quantities on nine other sites.

#### Algalitic Chert

Algalitic chert is a distinctive material that ranges from "brown" to "yellow" in color. On a Munsell color chart, the former is generally brown (7.5YR5/2), but shades to dusky red (2.5YR3/2), dark reddish brown (2.5YR3/4), reddish gray (5YR5/2) and dark reddish gray (5YR4/2). The yellow component is more variable and ranges from very pale brown (10YR8/4) to reddish

yellow (7.5YR6/6 and 7.5YR7/6) to light reddish brown (5YR6/4). The brown component is lustrous and has a highly siliceous composition. The yellow component is more limey and usually contains fossil algal structures that are light yellow or cream colored. Both colors may contain patches or tiny spots of the other color. Small pieces of this material may be entirely composed of one component, but most pieces contain both in a banded, swirling, convoluted or lacy pattern. The juncture between the yellow and brown components is generally abrupt, and bands, stripes and lacy areas of a particular color may be as small as 1 mm wide. The striking differences in the color and texture of the brown and yellow components would make it hard to believe that they are gradations of the same material were they not routinely found on the same piece.

A similar algalitic chert is found throughout much of southwestern Wyoming with a distinctive form being found in the vicinity of Whiskey Butte (Love 1977:24). Its geologic source, however, is apparently unknown (Smith 1988:B2). Similarly, the geologic source of the algalitic chert found in the Devils Lane Area is also unknown. Although cortex is not common in the Devils Lane Area assemblage, the cortex present appears to indicate a primary geologic source rather than a secondary source such as a river terrace or lag deposits. A few small chunks of this material were found on a talus slope in Devils Lane, so it may be that the algalitic chert is local to the Devils Lane Area and eroding out of the Cedar Mesa Sandstone. Much more research will be necessary before this preliminary suggestion can be confirmed or refuted.

Algalitic chert is very rare in the Salt Creek Pocket Area occurring in small quantities on less than 6% of the sites. It constitutes one of the main materials on more than 15% of the sites in the Devils Lane Area, and occurs as a minor material on several other sites.

#### Other Materials

A wide variety of other materials was found during the survey. These were categorized using descriptive labels identifying the color, stone type (e.g., chert, quartzite, chalcedony, siltstone, obsidian) and any other distinguishing features (e.g., mottled, speckled, limey composition, etc.). For the purposes of this project, chalcedony refers to all translucent, cryptocrystalline and microcrystalline silicates. Some of these descriptive categories will probably prove to be discrete types that can be attributed to a specific geologic formation and source area. Others will not. Specimens categorized as one descriptive type, "brown chert", for example, may have come from more than one source, and two seemingly distinct types, such as "purple chert" and "gray chert," may be from the same geologic formation and/or source area. Unfortunately, such nuances could not be identified at this stage of the research due to the lack of existing lithic source information for the area, the noncollection policy that the National Park Service established for this project, and the fact that most of these materials occurred in such small quantities that their range of variability could not be identified. More work, including the study of collections in the laboratory, will be necessary to sort these descriptive categories into types.

The most common descriptive types are discussed below as a first step in identifying whether they represent discrete types. Information on other descriptive types observed during the survey can be obtained from the IMACS site forms composing Appendix F. Other than the named types discussed in the preceding sections, the most common lithic types discovered in the project area are brown chert, white chert, gray chert, gray-brown chert, orange chert, tan chert, purple chalcedony and gray quartzite.

Brown chert is one of the primary materials on one site in the Salt Creek Pocket Area and four sites in the Devils Lane Area. It occurs in small amounts on about



40% and 20% of the sites in these two areas, respectively. The brown chert is highly siliceous and characterized by conchoidal fracture; it rarely retains cortex. This descriptive type may be a variation of the Cedar Mesa Chert, the brown component of the algalitic chert and/or some other chert type.

White chert occurs as a primary material on three sites in the Salt Creek Pocket Area and one site in the Devils Lane Area; it is a secondary material on about 25% of the sites in the Salt Creek Pocket Area and 10% of the sites in the Devils Lane Area. This material is similar to the brown chert in all respects except color. Sharrock (1966:64) observed white chert outcropping with the material we have designated Cedar Mesa Chert near Salt Creek; one such source was found in the survey area. Some or all of the white chert could be from the Cedar Mesa Formation.

Gray chert occurs as a primary material on four sites in the Devils Lane Area but is much more common as a minor material, occurring on about 24% of the sites. It is found as a secondary material on about 10% of the sites in the Salt Creek Pocket Area. The gray chert is a homogeneous, lustrous silicate with occasional mottling. The source of this material is uncertain. Losee and Lucius (1975:33) identified a source area of mottled gray chert "... on an unnamed bottom south and across the Green River from Fort Bottom. ..." This chert was weathering out of the Moenkopi Formation. The gray chert found in the project area could have come from this source area, herein termed the Fort Bottom Source Area, or some other as yet unidentified source.

Gray-brown chert, possibly a gradation between the brown chert and gray chert types, was found in sufficient quantities to warrant further investigation. It is present on 11 of the 41 sites in the Devils Lane Area and is a primary material on six of these sites. It is found in small amounts on seven sites in the Salt Creek Pocket Area.

This material is high quality, lustrous and fractures conchoidally.

Orange chert is a primary material on five sites in the Salt Creek Pocket area. It appears in minor quantities on seven other sites in this same area and on two sites in the Devils Lane Area. This chert is bright in color and highly siliceous, easily differentiating it from the limey orange variety of the Cedar Mesa Chert identified near Squaw Butte during the 1988 survey. The specimens found during the survey were mainly secondary flakes lacking cortex. No information is presently available on the source.

Another material for which no information on origin or source is available is tan chert, which is found in small amounts on 10 sites in the Salt Creek Pocket Area and 1 site in the Devils Lane Area. Like the orange chert, debitage of this material typically consists of secondary flakes lacking cortex. The material is high quality and lacks inclusions and fracture planes.

A common material in both areas is purple chalcedony which occasionally grades to light purple chalcedony. In the Salt Creek Pocket Area, this material is common on two sites and found in small amounts on 21 sites. It was also found in small quantities on two sites in the Devils Lane Area. Losee and Lucius (1975:33) discovered a source area of mottled purple-white chalcedony at Turks Head Bottom along the Green River (Figure 12). Further research would be necessary to determine if this source was used to obtain the purple chalcedony found in the project area.

Although a variety of different colors of quartzite is present in the project area, the only one that occurs with any regularity is light gray. This material is highly flakeable and ranges from fine to medium grained. Gray quartzite is a common material on two sites in the Devils Lane Area, and occurs in small amounts on six sites in the Salt Creek Pocket Area and five sites in the Devils Lane Area. The geologic origin and source of this material are unknown.

Obsidian does not occur in any great frequency, but its presence is worthy of mention. Obsidian debitage is present on one site in the Salt Creek Pocket Area and one isolated obsidian point was also found in this survey area. The closest sources of obsidian are in southwestern Utah (cf. Nelson and Holmes 1979), though the Salt Creek specimens could be from one of many different sources in Utah, Arizona, New Mexico or other states. Identifying the source(s) of these obsidian artifacts could provide important data to address research questions within the Cultural Interaction domain.

#### Discussion

by William A. Lucius

Application of a general concept of distance falloff (Renfrew 1977)—which assumes that the amount of material derived from a particular source will decrease or falloff at increasing distances from that source—allows some general comments about the movement of source material across the Needles District. The following interpretation is necessarily tentative, being based on minimal data and incomplete knowledge of resource locations. But the general patterns of lithic movements that have been observed thus far are presented in hopes of structuring future studies of Canyonlands archeology from a sourcing perspective.

The occurrence of Summerville Chalcedony in the Salt Creek Pocket Area, and its observed falloff towards the Colorado River (i.e., in the Devils Lane Area), indicates a general east-to-west movement of the people responsible for its transfer. Direct access (Ericson 1977:120) to source areas by its users is assumed. The similar falloff of red cherts from the Salt Creek Pocket Area in the Devils Lane Area supports this east-to-west pattern of lithic, and by extension, population movement. The occasional occurrence of materials from the north and west (Fort Bottom and possibly the Turks Head Source Area) in the Salt Creek Pocket Area suggests that movements from these areas also occurred, but these

observations do not negate the general pattern of lithic source materials mainly moving from east to west.

#### Projectile Points

Forty-nine projectile points were recorded during the survey, 42 on sites and 7 as isolated finds (Table 13). The 49 total specimens represent nine formally recognized types: "Desha style" (cf. Lindsay et al. 1968), Sudden Side-notched, Elko Corner-notched, Elko Side-notched, Parowan Basal-notched, Bull Creek, Styles A, B and C (cf. Hayes and Lancaster 1975), as well as nine categories of indeterminate points. Of the 20 typeable specimens, 2 are Archaic types (Figure 13) and 12 are Anasazi types (Figure 14). Six others belong to the Elko Series (Figure 13) which can be found in Archaic, Basketmaker or Fremont sites.

Projectile points occur on 17.8% of Salt Creek Pocket Area sites and 26.8% of the Devils Lane Area sites, possibly reflecting the greater access and potential for illicit collection in the former area. The Salt Creek Pocket Area assemblage consists of 22 points on 18 sites, and 7 isolated finds. Twenty points observed on 11 sites constitute the Devils Lane Area assemblage. Most sites in both areas contain only one projectile point on the surface, though several have two or three and one has four.

The relative abundance and diversity of the various material types used to make projectile points is approximately equivalent to that observed in the debitage assemblage. About 70% of the points are made from the materials that are common in the debitage assemblage (e.g., red Cedar Mesa Chert, Summerville Chalcedony, brown chert, white chert, gray chert, orange chert, tan chert, purple chalcedony and gray quartzite), with the remaining 30% being made from stone types that are either exotic (e.g., obsidian) or rare in the debitage assemblage (e.g., pink chalcedony, gray chalcedony, white quartzite). No projectile points of algalitic chert were observed.



Table 13. Projectile point data by site and isolated find.

Site Number	Projectile Point Type	Material	Figure
42SA8493	Indeterminate	Red Cedar Mesa chert	-
42SA17088	Large side-notched	Brown chert	-
42SA17091	Elko Corner-notched	Gray chalcedony	13c
42SA17092	Sand Dune Side-notched	Reddish brown chert	13a
42SA17096	Sudden Side-notched	White quartzite	13b
	Large side-notched	Gray chalcedony	-
	Large corner-notched	White Summerville chalcedony	-
42SA17100	Large corner-notched	Red Cedar Mesa chert	-
42SA17116	Large side-notched	Orange chert	-
42SA17121	Style B	Yellow-pink chalcedony	14b
	Bull Creek	White chert	14k
	Large Stemmed	Red Cedar Mesa chert	16a
	Large side-notched	Red Cedar Mesa chert	-
42SA17124	Indeterminate	Red Cedar Mesa chert	-
42SA17125	Style B	Pink chalcedony	14c
	Style B	Red Cedar Mesa chert	14d
	Small corner-notched	Gray chert	-
42SA17126	Parowan Basal-notched	Gray quartzite	14j
42SA17128	Style B	Red Cedar Mesa chert	14e
	Style B	Orange chert	-
	Large Stemmed	White Summerville chalcedony	16b
42SA17139	Elko Side-notched	Tan chert	13f
42SA17140	Large corner-notched	Red Cedar Mesa chert	-
42SA17141	Elko Side-notched	Brown chert	13g
	Style A	Red Cedar Mesa chert	14a
42SA17142	Large corner-notched	White chert	-
42SA17143	Elko Corner-notched	Gray chert	13d
	Indeterminate	Brown chert	-
42SA17153	Style B	Purple chalcedony	14f
	Medium side-notched	White chert	16d
42SA17157	Large corner-notched	White Summerville chalcedony	-
42SA17158	Large Stemmed	Red Cedar Mesa chert	16c
42SA17159	Indeterminate	Brown chert	-
42SA17160	Elko Corner-notched	Gray chert	13e
	Large corner-notched	White Summerville chalcedony	-
42SA17162	Style C	Purple chalcedony	14i
42SA17165	Elko Side-notched	Multicolored chalcedony	13h
42SA17169	Large side-notched	Gold-white chalcedony	-
42SA17175	Medium corner-notched	Gray quartzite	16e
42SA17184	Style B	Purple-orange chalcedony	14g
42SA17188	Medium corner-notched	White Summerville chalcedony	-
42SA17196	Indeterminate	Red-white chert	-
IF 5	Small side-notched	White chert	-
IF 47	Style B	White chert	14h
IF 48	Large corner-notched	Gray chert	-
IF 53	Medium corner-notched	Indeterminate	-

Table 13. Projectile point data by site and isolated find (continued).

Site Number	Projectile Point Type	Material	Figure
IF 56	Indeterminate	Gray chert	-
IF 67	Large side-notched	Obsidian	-
IF 72	Small triangular	White chert	-

As in the debitage assemblage, local red chert from the Cedar Mesa Formation is most common with approximately 20% of the projectile points made from this material. Next most common, constituting about 10% of the total each, are Summerville Chalcedony and white chert. These two materials are the second and fourth most common materials in the debitage assemblage, respectively. Approximately 8% of the tools each are brown chert and gray chert; these materials are the third and sixth most common stone types observed among the debitage. Small numbers of tools are made from orange chert (n=2), tan chert (n=1), purple chalcedony (n=2) and gray quartzite (n=2). A number of other uncommon materials are also present.

There is a slight difference in material types used for projectile points in the two survey parcels. The Salt Creek Pocket Area assemblage is marked by a greater diversity of material types than the Devils Lane Area assemblage, and has a lower percentage of points made from the locally available Cedar Mesa Chert (18.2% versus 41.0%), and a higher percentage of points made from high-quality chalcedonies. There is no striking difference in material types between the Anasazi points and Archaic/Elko points except that the local red chert is slightly more common in the Anasazi assemblage. This difference is logical in that the Anasazi were more sedentary and probably had less access to more distant materials, but requires further investigation because the difference could be the result of an insufficient sample.

#### Sand Dune Side-notched

Possibly the earliest point discovered by the survey is a "Desha style" specimen

found on site 42SA17092, Salt Pocket Shelter, in the Salt Creek Pocket Area (Figure 13a). Similar points were recovered from Sand Dune Cave, a multicomponent site excavated during the Glen Canyon Project (Lindsay et al. 1968). Located on the northeast side of Navajo Mountain, about 140 km southwest of survey area, this site contained Pueblo II, Basketmaker II and Archaic materials. The Archaic materials were defined as comprising the Desha Complex, which is believed to date between 7050 and 5050 B.C. Among the artifacts ascribed to the Desha Complex were several small "long and slender", "oval or leaf-shaped" points with shallow, poorly formed, irregular side notches. These points appear to be the same style as the specimen recovered from Salt Pocket Shelter. For ease in referring to such points in the future, we propose that they be called Sand Dune Side-notched after the site where they were first recovered.

Unfortunately, the dating of this distinctive point style is somewhat problematic because the Sand Dune Cave was excavated in arbitrary levels rather than by natural stratigraphy, making artifact associations and dating difficult. Fortunately, however, all of the Sand Dune Side-notched points were recovered from a distinct feature, Burial 2 which originated in Stratum III. Stratum III, the second earliest cultural stratum encountered in the cave, was not dated by any direct means, but its stratigraphic position requires that it predate Stratum V. Three open twined sandals recovered from the bottom of Stratum V were radiocarbon dated to  $7150 \pm 130$  B.P. (5200 B.C.),  $7540 \pm 120$  B.P. (5590 B.C.) and  $7700 \pm 120$  B.P. (5750 B.C.)

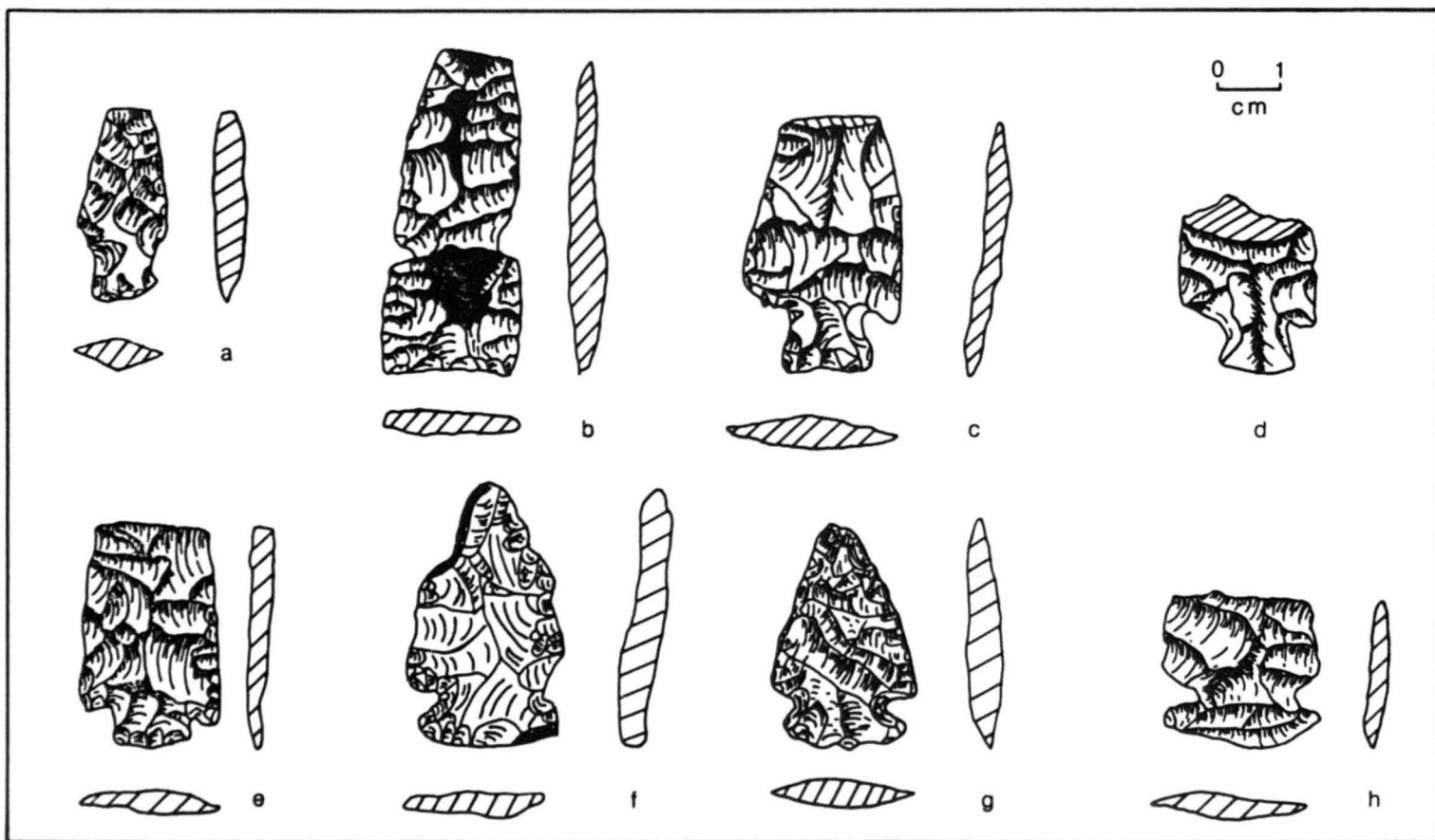


Figure 13. Archaic and selected Elko projectile points. a, Sand Dune Side-notched, site 42SA17092; b, Sudden Side-notched, site 42SA17096; c, Elko Corner-notched, site 42SA17091; d, Elko Corner-notched, site 42SA17143; e, Elko Corner-notched, site 42SA17160; f, Elko Side-notched, site 42SA17139; g, Elko Side-notched, site 42SA17141; h, Elko Side-notched, site 42SA17165.

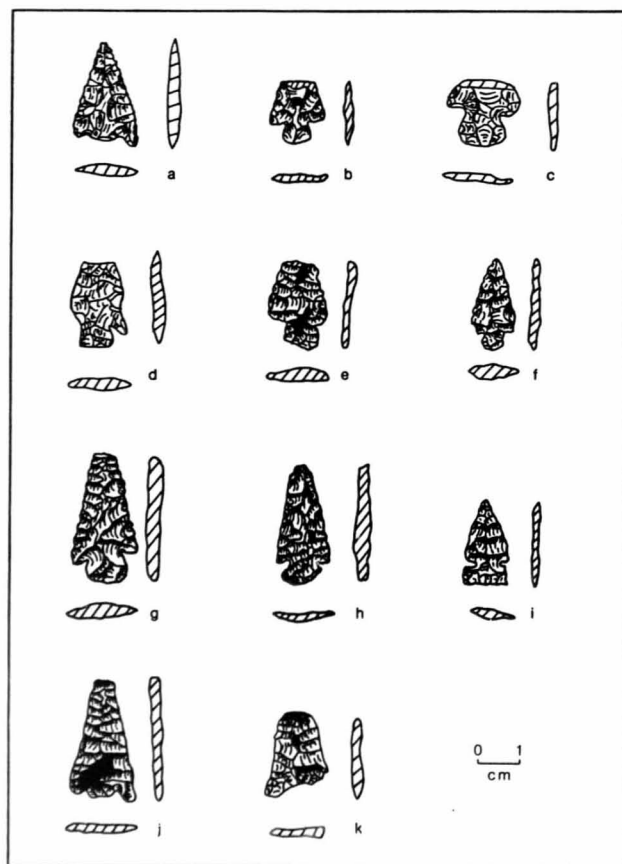


Figure 14. Selected Anasazi arrow points. a, Style A, site 42SA17141; b, Style B, site 42SA17121; c-d, Style B, site 42SA17125; e, Style B, site 42SA17128; f, Style B, site 42SA17153; g, Style B, site 42SA17184; h, Style B, Isolated Find 47; i, Style C, site 42SA17162; j, Parowan Basal-notched, site 42SA17126; k, Bull Creek, site 42SA17121.

(uncorrected) suggesting that the points were made and interred prior to 7000 years ago. This interpretation is dependent on the accuracy with which the level of origin for Burial 2 was determined during the excavation—which can be difficult in stratified sand dune situations—but there is no reason to doubt that level of origin was improperly identified. However, as the authors themselves indicate, more specimens from well-dated contexts are needed to verify and refine the chronological span of this distinctive point style.

The specimen from Salt Pocket Shelter is virtually identical to those illustrated by Lindsay et al. (1968:Fig. 23). It has an elongate, triangular blade, wide, shallow, irregular side notches and a convex base. It is a maximum of 1.45 cm wide, more than 3.00 cm long (incomplete) and 0.52 cm thick, and has a neck width of 0.86 cm. The point is somewhat thick relative to its overall size and is made from reddish brown chert which is probably the local Cedar Mesa Chert. A radiocarbon date of  $3340 \pm 110$  years:1390 B.C. (Beta-21209) was obtained from an unlined hearth on this site, but the point was a surface find and the two cannot be directly associated based on current evidence. If the Desha dates are correct, the point probably dates to the Early Archaic; therefore, it provides tentative evidence of Early Archaic occupation in the Salt Creek Pocket Area.

#### Sudden Side-notched

The Middle Archaic is represented by a white quartzite Sudden Side-notched point observed on site 42SA17096 in the Salt Creek Pocket Area. This point has a large triangular blade with slightly convex margins, high horizontal side notches and a slightly concave base (Figure 13b). Sudden Side-notched projectile points are believed to date between 4450 and 2750 B.C. (Holmer 1978).

#### Elko Series

Elko points were first identified in 1961 at Wagon Jack Shelter and Eastgate Cave (Heizer and Baumhoff 1961) but were not named until 1968 (Heizer et al. 1968).

Four variants have been recognized: Contracting Stem, Eared, Side-notched and Corner-notched. Neither the Contracting Stem (now known as Gypsum or Gatecliff Contracting Stem) nor the Eared variety were found during the survey. Holmer (1986:102) considers the other two varieties to be a single type because they "constitute a continuum between the two extremes." He further suggests that they "should be referred to as Elko Corner-notched."

Six such points were observed during the survey, three in the Salt Creek Pocket Area and three in the Devils Lane Area. These points are characterized by large triangular blades with straight to slightly excurvate margins. Three are corner notched; three are side notched and all but one have a convex base (Figure 13c-h). The corner-notched varieties are made from gray chert (n=2) and gray chalcedony (n=1), whereas the side-notched varieties are made from tan chert (n=1), brown chert (n=1) and multicolored chalcedony (n=1).

Elko points have a long time span on the Colorado Plateau dating from as early as 6050 B.C. until A.D. 1000 (Holmer 1986). They have been recovered from Archaic (Jennings 1980; Jennings et al. 1980), Basketmaker (Kidder and Guernsey 1919) and Fremont (Jennings and Sammons-Lohse 1981) contexts on the Colorado Plateau and, as such, have not been assigned to a particular temporal period.

#### Style A

Based on their excavations at Badger House in Mesa Verde National Park, Hayes and Lancaster identified three styles of Anasazi arrow points as shown in Figure 15.

Style A is deeply corner notched with a straight stem, Style B is corner notched with an expanded base, and Style C is notched at the sides and has a short stem. They seem to have developed in that order [1975:144-145].

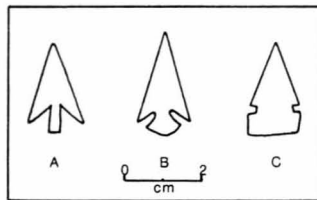


Figure 15. Styles of Anasazi arrow points. Adapted from Hayes and Lancaster 1975:Fig. 178.

Style A points primarily occur in Basketmaker III and Pueblo I contexts and continue into early Pueblo II. Morris (1939:Plate 126) recovered Style A projectile points from Basketmaker III and Pueblo I contexts at sites in the La Plata District. Roberts found them at Shabik'eschee Village, a late Basketmaker site in Chaco Canyon (1929) and in Pueblo I associations at both Kiatuthlana (1931) and sites in the Piedra District (1930). Brew (1946) recovered them from Pueblo I levels at Site 13 on Alkali Ridge. At Mesa Verde, O'Bryan (1950) recovered Style A points from Pueblo I and early Pueblo II sites. Work on the Dolores Archaeological Program corroborates these early dates with most Style A points dating to the Sagehen (A.D. 600-850) and McPhee (A.D. 850-975) phases (Vierra and Phagan 1984).

A single Style A projectile point was discovered during the project (Figure 14a). Made from red Cedar Mesa Chert, this point is finely pressure flaked. It has a triangular blade with lightly serrated edges and is deeply corner notched. It was recovered from a multicomponent site, 42SA17141, on the north end of Butler Flat. The only other sites discovered during the project with Basketmaker III or Pueblo I materials are located in Chesler Canyon, in close proximity to site 42SA17141. These data suggest the possibility that there was

a small Basketmaker III-Pueblo I community in the northern Butler Flat/Chesler Canyon area.

#### Style B

Style B projectile points are corner-notched arrow points with narrow triangular blades that range from slightly excurvate to slightly incurvate. The corner notches create distinct, pointed tangs and expanding stems. In the Southwest, Style B points are primarily found in Pueblo I and II contexts, but occasionally occur in Pueblo III assemblages (Hayes and Lancaster 1975:145).

Eight Style B points were observed and recorded during the 1985 survey, seven on sites and one as an isolated find (Figure 14b-h). Three occur in the Salt Creek Pocket Area and five are from the Devils Lane Area. They co-occur with large stemmed points that may date to Basketmaker III-Pueblo I on two sites in the Devils Lane Area; one of these sites also has a Bull Creek point. The Style B points are made from a variety of material types, most of which are apparently nonlocal. Material types are: red Cedar Mesa Chert (n=2), orange chert (n=1), white chert (n=1), purple chalcedony (n=1), pink chalcedony (n=1), yellow-pink chalcedony (n=1) and purple-orange chalcedony (n=1).

Some researchers would probably consider Style B projectile points within the range of Rose Spring Corner-notched points defined by Lanning (1963) at the Rose Spring site in Inyo County, California. Lanning describes this type as follows:

Barbed or straight-shouldered points with corner notches. Stem expands, but usually not markedly. Blade varies from convex-sided to concave-sided, the latter often with small flaring bulbs [1963:252].

Thomas (1981) has recently suggested that the Rose Spring Series, including Rose

Spring Corner-notched, be combined with the Eastgate Series defined by Heizer and Baumhoff (1961) at Wagon Jack Shelter in eastern Nevada, to form a "Rosegate Series" because their forms grade into one another and because they have similar temporal spans. Rose Spring or Rosegate points date between approximately A.D. 300 and 925 on the northern Colorado Plateau and are reported in very late Archaic and Fremont contexts (Holmer and Weder 1980).

The problem of whether to classify corner-notched arrow points with expanding bases as "Style B" or "Rosegate" was at first perplexing, but we chose to use the Style B label for several reasons. First, Style B connotes an Anasazi origin, whereas Rosegate, used widely in the Great Basin, may imply Fremont or Archaic use. We felt that the Anasazi ascription was more appropriate because half of the points in question occur on sites with Anasazi pottery and because there is little other evidence of Fremont in the Needles District.

Second, and more importantly, the points discovered during the survey have a different base and stem than the Rose Spring points illustrated in the original report (Lanning 1963) and the Rosegate points illustrated by Thomas (1981) from Gatecliff Shelter. The Canyonlands points have more rounded tangs than Rose Spring/Rosegate projectile points, and the bottom of the tang is frequently horizontal rather than pointing downwards. This difference is because the Style B points are actually more stemmed than they are corner notched. The Style B points also have longer and more bulbous expanding stems than the Rosegate points and the bases are generally rounded rather than straight as in the Rosegate style. After observing these differences, we have no difficulty considering the points Anasazi Style B rather than Rosegate. We recognize, however, that much more work needs to be done defining differences between these types and more accurately pinpointing the dates of Style B.

#### Style C

Style C, as described by Hayes and Lancaster (1975:144), consists of side notched arrow points with short stems and wide bases. Style C points are generally considered a Pueblo II-III type. The only such point recorded during the survey is purple chalcedony specimen on site 42SA17162 in the Salt Creek Pocket Area (Figure 14i). This point has high shallow side notches, a triangular blade and an exaggerated base. This point could also be considered a Nawthis Side-notched which Holmer and Weder (1980:61) consider "... similar, if not identical, to points associated with Pueblo II occupations south of the Colorado River" (in southeastern Utah). Nawthis Side-notched points date between A.D. 950 and 1250, which is similar to the Pueblo II-III span proposed for Style C points.

#### Parowan Basal-notched

One gray quartzite Parowan Basal-notched point was observed during the project; it was found on site 42SA17126 in the Devils Lane Area. The point is shaped like an elongate isosceles triangle and has shallow basal notches which form tangs and a slightly contracting, wide stem (Figure 14j). Parowan Basal-notched points are most common in Fremont sites in the Parowan Valley and in Virgin Anasazi sites along the Virgin and Santa Clara rivers and in Johnson Canyon in extreme southwestern Utah (Holmer and Weder 1980).

However, it is not unusual to find Parowan points as far west as Canyonlands. Parowan points have also been reported in the Bull Creek drainage near Hanksville (Jennings and Sammons-Lohse 1981), at Coombs Village near Boulder (Lister 1959b) and in sites in Lower Glen Canyon (Adams et al. 1961; Long 1966; Tipps 1983). Parowan points date between A.D. 950 and 1150 in the Parowan and Virgin regions (Holmer and Weder 1980:67).

#### Bull Creek

A single Bull Creek point was observed on site 42SA17141 in the Devils Lane Area. This small, triangular point has straight

margins and a concave base that emphasizes basal corners (Figure 14k). It is made from white chert. Bull Creek points are common "... in Fremont sites in central Utah and on both Mesa Verde and Kayenta Anasazi sites along the Colorado, Escalante and Dirty Devil rivers in southeastern Utah" (Holmer and Weder 1980:Fig. 10). They date between A.D. 1100 and 1250 in the general project area (Holmer and Weder 1980:61).

#### Large Side-notched

Five large side-notched points were found, four on sites and one as an isolated find. These points could not be typed due to breakage and/or resharpening, though one may be an Elko or Northern Side-notched point. Material types include red Cedar Mesa Chert, brown chert, orange chert, gray chalcedony and obsidian.

#### Large Corner-notched

Eight large corner-notched points were recorded, seven on sites and one as an isolated find. One of these points is reworked and another has a rocker base. Two are made from the local red Cedar Mesa Chert; three others are made from the Summerville Chalcedony. Other material types are white chert (n=1), gray chert (n=1) and gold-white chalcedony (n=1).

#### Large Stemmed

Two large stemmed projectile points were found in the Devils Lane Area (Figure 16a-b). These points have triangular blades and wide corner notches that create tangs and stemmed bases. The stems are markedly wide and taper from top to bottom. These points were found on sites with Basketmaker III and/or Pueblo I pottery and may therefore be Basketmaker III-Pueblo I types. Another similar, but smaller stemmed point was found on an undated site in the Salt Creek Pocket Area (Figure 16c). It is not certain whether this point is the same "type" and dates to Basketmaker III-Pueblo I. No other evidence of Basketmaker III or Pueblo I occupation was found in the Salt Creek Pocket Area and it may be that this point represents some other type. Two of the points in

this category are made from local red Cedar Mesa Chert; one is made from Summerville Chalcedony.

#### Medium Side-notched

One white chert, medium side-notched point was observed on site 42SA17153 in the Salt Creek Pocket Area. This point has a triangular, lightly serrated blade, a straight base and shallow side notches (Figure 16d). It may be a variety of Style C recognized by Hayes and Lancaster (1975:144) and therefore date to the generalized Pueblo II-III period. It is similar to specimens recovered from Pueblo II-III deposits on Alkali Ridge (Brew 1946:Fig. 172). A Style B point, which apparently dates to Pueblo I-II, was found on the same site (Figure 14f).

#### Medium Corner-notched

Three medium corner-notched points with triangular blades, one of white Summerville Chalcedony, one of gray quartzite and one of an indeterminate material were found in the Salt Creek Pocket Area. Two occur on sites; one is an isolated find. One of these points has a rounded base and slightly excurvate blade margins (Figure 16e). It resembles Type 2 points found "throughout the DAP sequence" on the Dolores Archaeological Program (Vierra and Fagan 1984:140) and may be of Anasazi origin.

#### Small Side-notched

A piece of a small side-notched, white chert projectile point was found as an isolated find in the Salt Creek Pocket Area. Its size and shape suggests that it may have been an Anasazi point, but breakage prevents definite categorization.

#### Small Corner-notched

A fragment of a small corner-notched, gray chert projectile point was found on site 42SA17125 in the Devils Lane Area. This point co-occurred with two Style B projectile points and is probably of Anasazi origin.

#### Small Triangular

One small, triangular, white chert point was discovered as an isolated find in the Salt Creek Pocket Area. This point may

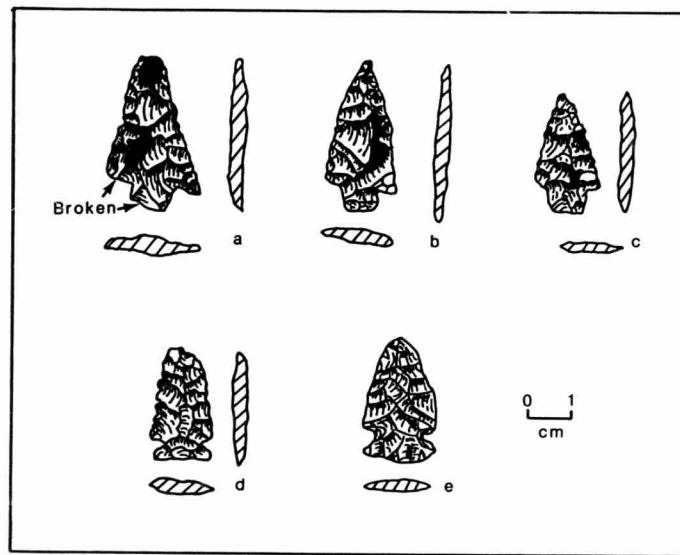


Figure 16. Selected indeterminate projectile points. a, Large Stemmed, site 42SA17121; b, Large Stemmed, site 42SA17128; c, Large Stemmed, site 42SA17158; d, Medium Side-notched, site 42SA17153; e, Medium Corner-notched, site 42SA17175.

have been a Bull Creek type but was broken and could not be typed.

#### Indeterminate

Six completely indeterminate points were observed. Material types generally parallel the rest of the point assemblage with two of red Cedar Mesa Chert, two of brown chert, one of gray chert and one of red-white chert.

#### Bifaces

A total of 248 bifaces was recorded during the 1985 survey, 242 on sites and 6 as isolated finds. As the most common

category of chipped stone tool, bifaces were found on 62.4% of the sites in the Salt Creek Pocket Area and 53.7% of the sites in the Devils Lane Area. Biface frequency ranges from 0 to 9 per site in the Salt Creek Pocket Area, with an average of 2.13 bifaces per site on sites with bifaces. In the Devils Lane Area, frequency generally ranges between 0 and 14 per site though one site had 22 bifaces. There is an average of 4.91 bifaces on sites with bifaces, though 2 is the modal category. It is not certain whether the higher number of bifaces in the Devils Lane Area is the

result of more difficult access and, therefore, less collecting or a cultural difference. Five of the isolated bifaces were found in the Salt Creek Pocket Area; the other is from the Devils Lane Area.

Both blanks and preforms were recorded during the project with preforms being the most common (Figure 17). The majority of preforms were fragmentary, however, with snap fractures across the middle of the tool being commonly observed. One unusual biface observed during the project is a probable hafted knife made from red-tan chert (Figure 18). Found on a Pueblo I-II site in the Devils Lane Area, this tool is characterized by a wide triangular blade with pressure flaking along one margin and shallow corner notches that create a short, wide stem. It is thin and lenticular in cross-section and measures about 9 cm long and 5 cm wide. Another probable hafted knife was found on a multicomponent Late Archaic/Pueblo II-III site about 200 m to the southwest. This bi-pointed tool is made of an exotic, high-quality gray chert with numerous maroon inclusions. It is thin and finely flaked, and has a slightly asymmetrical lanceolate shape. There are two shallow notches about 2 cm above the base. The tip and upper margins of the tool exhibit edge rounding indicating use as a knife. This tool was collected during the testing and is illustrated in Chapter 7 with the other collected artifacts.

Material types used for biface manufacture vary considerably between the Salt Creek Pocket and Devils Lane areas, presumably reflecting local raw material availability, and generally parallel trends observed in the debitage assemblage. For example, in the Salt Creek Pocket Area, most bifaces are made from the two most common material types: the majority (51%) are made from the local, readily available, red chert derived from the Cedar Mesa Formation. Another 12% are made from Summerville Chalcedony. Materials that are uncommon and rare in the debitage assemblage are represented by only one or

two bifaces. However, there is also a dissimilarity between the materials used for bifaces and debitage in that only a few bifaces are made from other common materials on sites in the Salt Creek Pocket Area: brown (3%), white (1%), orange (3%), gray (3%) and tan chert (2%), and purple chalcedony (3%).

In the Devils Lane Area, the majority of bifaces are made from brown chert (23%), algalitic chert (20%) and red Cedar Mesa chert (19%), with fewer bifaces being made from gray-brown chert (8%), gray chert (4%), gray quartzite (4%), Summerville Chalcedony (3%) and orange chert (3%). In descending order, the most common materials in the debitage assemblage in Devils Lane Area sites are red Cedar Mesa Chert, gray chert, algalitic chert, brown chert, gray-brown chert, Summerville Chalcedony and gray quartzite.

#### Drills

Drills were found on two different sites in the Salt Creek Pocket Area, both of unknown age and affiliation, sites 42SA17082 and 42SA17175. The specimen on site 42SA17082 is made from Summerville Chalcedony and consists of a long, narrow, finely flaked shaft; the base is missing. The drill from site 42SA17175 has a broken tip and is made from local red chert.

#### Choppers

Two choppers were found in the Salt Creek Pocket Area, one on an Archaic site and one on a site of unknown age and aboriginal affiliation. These two sites are in close proximity. One chopper is made from the local red chert; the other is made from mottled white chert. The red chert specimen is retouched and axe shaped in cross-section.

#### Unifaces and Scrapers

Thirteen unifaces and/or scrapers were discovered on 10 sites, 8 in the Salt Creek Pocket Area and 2 in the Devils Lane Area. One isolated uniface was also found in the

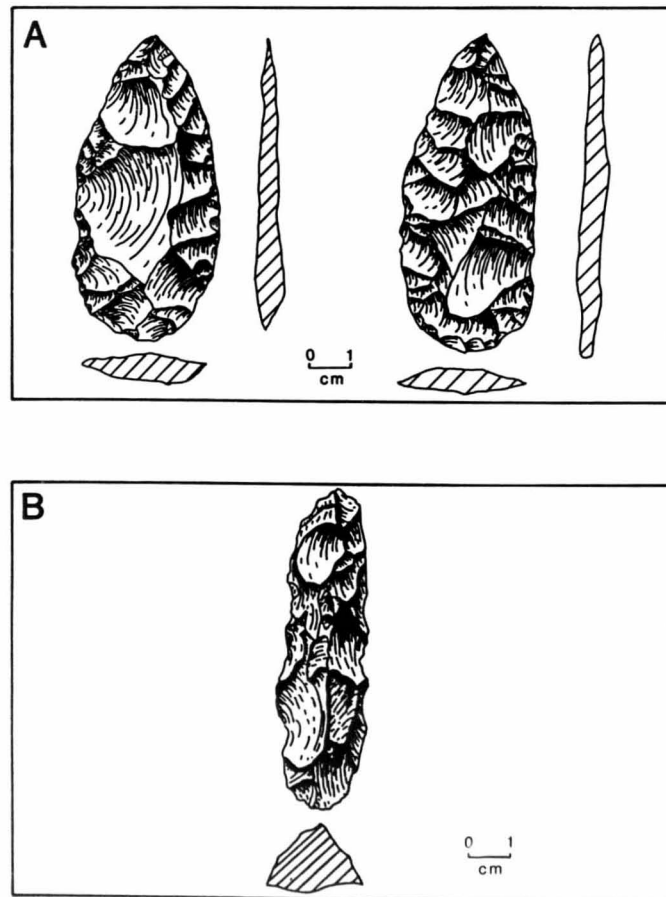


Figure 17. Selected bifaces. a, bifacial preforms from site 42SA17127; b, example of a thick, crudely flaked bifacial blank.





Figure 18. Probable hafted knife from site 42SA17125 in the Devils Lane Area.

Salt Creek Pocket Area. Eight of the 10 sites have only 1 uniface or scraper, but 1 site has 2 scraping tools and another has 3. The majority of the scrapers and unifaces are less than 5 cm long in their longest dimension.

In the Salt Creek Pocket Area, two of the nine implements appear to be formal scrapers, whereas six others are unifaces made by retouching a flake. The remaining uniface is made from a reworked, conical-shaped core. The formal scrapers are from an Anasazi site and a site of unknown aboriginal affiliation, whereas the cone-shaped uniface is from a multicomponent

site with Archaic and Anasazi materials. About half of the unifaces and scrapers are made of Cedar Mesa Chert; one each is made from Summerville Chalcedony, white chert, gray-brown chert and pink chert.

The assemblage of scraping tools from the Devils Lane Area is composed of four snub-nosed scrapers of varying sizes. Three of the scrapers were found on a single Anasazi site dating to Pueblo II-III; the other is from an Anasazi site dating to Pueblo I. The Devils Lane Area scrapers are made from gray-brown chert (n=2), Cedar Mesa Chert (n=1) and white chert (n=1).

Because all of the snub-nosed scrapers were found in the Devils Lane Area, there may be a relationship in scraper form and geographical area. This relationship may also extend to cultural affiliation given that the snub-nosed scrapers, and indeed all but one of the formal scrapers were found on Anasazi sites. These relationships need to be explored in more detail using a larger data base to determine whether they are the result of cultural behavior, sampling error or some other factor.

#### Gravers

One graver was observed on site 42SA17103 in the Salt Creek Pocket Area (Figure 19). Made from a flake of purple chalcedony, the graver is retouched on two margins and has two broken working points. A second graver, made from brown chert, was observed on site 42SA17125 in the Devils Lane Area.

#### Modified Flakes

Twenty-three modified flakes were observed on 17 sites, 8 in the Salt Creek Pocket Area and 9 in the Devils Lane Area. Modified flakes are therefore much more common in the Devils Lane Area—where they occur on 22.0% of the sites—than in the Salt Creek Pocket Area where they are found on 7.9% of the sites. Only one modified flake was recorded on the majority of sites, although one site in the Salt Creek

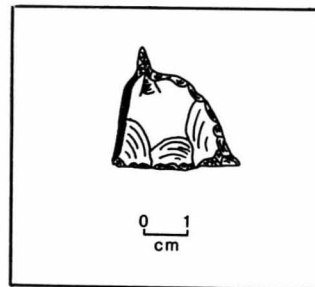


Figure 19. Graver from site 42SA17103 in the Salt Creek Pocket Area.

Pocket Area had five and a site in the Devils Lane Area had two.

The majority of the modified flakes are simply retouched on one or more margins, though one is notched and another is serrated; one Summerville Chalcedony flake in the Salt Creek Pocket Area had been flaked into a denticulate. Following trends observed in the debitage and elsewhere in the tool assemblage, most of the modified flakes in the Salt Creek Pocket Area are made of Cedar Mesa Chert or Summerville Chalcedony, with only one each being made from brown chert and black chert. Material types among the Devils Lane Area specimens are quite diverse and consist of Cedar Mesa Chert (n=3), gray-brown chert (n=2), algalitic chert (n=1), Summerville Chalcedony (n=1) and several other types.

#### Cores

Seventy-two cores were recorded on 38 sites, 27 in the Salt Creek Pocket Area and 11 in the Devils Lane Area. Six cores, four in Salt Creek and two in Devils Lane, were also recorded as isolated finds. Although cores occur on approximately the same percentage of sites in each area, there is a higher average number of cores on sites with cores in the Salt Creek Pocket Area ( $\bar{x}$

= 2.1) than in the Devils Lane Area ( $\bar{x}$  = 1.5). This difference is probably related to the greater availability of chipped stone sources in the Salt Creek Pocket Area. Approximately half of the sites have only one core; the remaining sites have two to eight cores.

Predictably, local red chert is the most common material among the cores in the Salt Creek Pocket Area, accounting for approximately 80%. Other materials include Summerville chalcedony (n=3), algalitic chert (n=1), brown chert (n=1), tan chert (n=1), miscellaneous other cherts (n=3), brown siltstone (n=1) and red-pink quartzite (n=1). With few exceptions, the cores have randomly oriented flake scars and are multidirectional. One unidirectional core with a conical shape was observed on an Archaic site in the Salt Creek Pocket Area, and two unidirectional, polyhedral-shaped cores were observed on a site of unknown age and affiliation in the Salt Creek Pocket Area. The cone-shaped core is made from red chert, has a 7-cm in diameter striking platform and is approximately 6 cm high. The polyhedral cores are both made from local red chert. One has five facets and a 2.6- to 3.7-cm-across striking platform (Figure 20). It is 5.7 cm long.

The majority of Devils Lane Area cores are made from local Cedar Mesa chert (n=10), with a few made from algalitic (n=3), gray (n=2) and brown (n=1) chert. The Cedar Mesa chert cores are generally made from the yellow to orange, low-quality, limey variety rather than the high-quality red variety which predominates in the Salt Creek Pocket Area. Multidirectional, randomly reduced cores again predominate, with two unidirectional cores also being found, one on an Anasazi site and the other on a multicomponent Archaic/Anasazi site. The former is made from algalitic chert, has five flake scars and measures 7.0 cm across by 4.5 cm high. The latter is made from gray chert and is also multifaceted.

## SUMMARY OF THE ARTIFACTS AND FEATURES

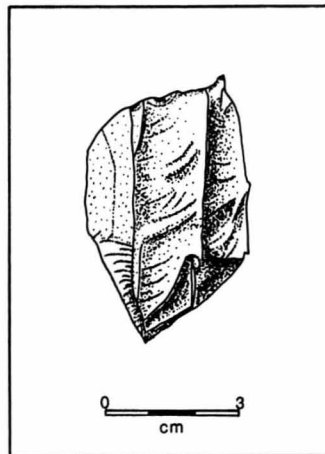


Figure 20. Polyhedral core from site 42SA17089 in the Salt Creek Pocket Area.

### Blades

by William A. Lucius

Several pressure detached blades were documented on a lithic scatter of unknown age and cultural affiliation in the Salt Creek Pocket Area, site 42SA17097. Although the actual number of blades on this large site was not counted, blades of at least three different material types as well as one uniface made by retouching a blade were noted. Seven additional blades were recorded on various sites in both survey areas, although none of these exactly replicate the morphology of the series of blades from site 42SA17097. Figure 21 is a drawing of the blade found on site 42SA17163. In addition, two red chert polyhedral cores, such as might be expected to result from the detachment of blades, were

documented at site 42SA17089, which is located near site 42SA17097.

With the exception of blade production among Paleindian groups, blade technology was not used in the Southwest (Carl Phagan, personal communication 1985). But the blades from the Canyonlands survey do not appear to be of Paleindian origin. This anomaly suggests that more detailed examination of Canyonlands lithic assemblages is necessary.

### Other Lithic Debitage

by William A. Lucius

Lithic debitage is the most commonly observed artifact class. Figure 22 displays the frequency of sites by the IMACS debitage quantity categories. The "25 to 100 flakes" category occurs most often, but larger assemblages are not uncommon in the two survey areas. Sites in the "0" category are rock art and historic sites with no associated lithic artifacts.

Figure 23 depicts the dominant flaking stage by number of sites. The data in Figure 23 support the field observation that the secondary flaking stage is prevalent

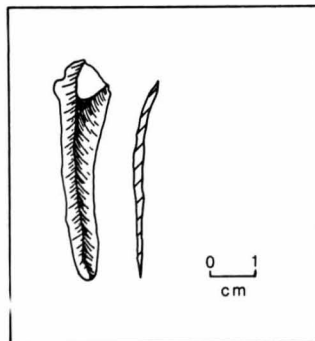


Figure 21. Blade from site 42SA17163 in the Salt Creek Pocket Area.

## SUMMARY OF THE ARTIFACTS AND FEATURES

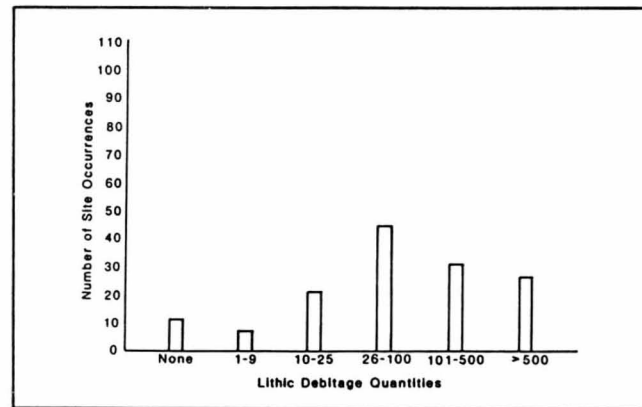


Figure 22. Frequency of sites by debitage quantity category.

and that sites with tertiary flaking are rare. Shatter, cores and decortication flakes are primarily associated with the lithic procurement sites.

### Pecked Stone and Groundstone Artifacts

Pecked stone and groundstone artifacts observed on the sites are limited to 33 hammerstones, 36 metates, 63 manos and 1 mano reused as a maul. Four manos, three metates and a hammerstone were recorded as isolated finds. These implements are generally made of locally available materials such as sandstone, quartzite and volcanic river cobbles.

### Hammerstones

Thirty-three hammerstones were observed on 26 sites, 17 sites in the Salt Creek Pocket Area and 9 sites in the Devils Lane Area. An isolated hammerstone was also found in the Salt Creek Pocket Area.

Relative to the number of sites recorded, hammerstones are slightly more common in the Devils Lane Area than the Salt Creek Pocket Area; this find is somewhat surprising given the abundance of raw material and lithic procurement sites in the Salt Creek Pocket Area, and their lack in the Devils Lane Area. More than 80% of the sites have only one hammerstone, though several sites have two or three such implements.

The Salt Creek Pocket Area is apparently lacking in the hard, dense materials commonly used for hammerstones (such as limestone and quartzite), as all but 2 of the 21 hammerstones are made from nodules and chunks of the same cherts and chalcedonies comprising the chipped stone assemblage. The chert and chalcedony nodules occasionally retain cortex, and typically measure between 5 and 10 cm in their longest dimension. The other two hammerstones are made from small quartzite river cobbles. Some of the chert

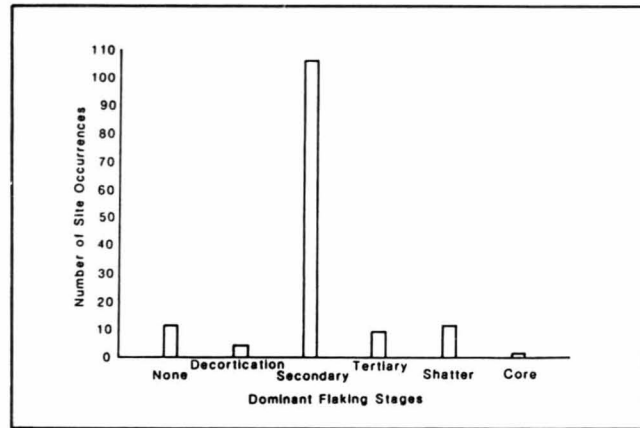


Figure 23. Frequency of sites by dominant flake stage.

specimens were used as cores prior to being used as hammerstones. Approximately half of the Salt Creek hammerstones were found on Anasazi sites, with only one being recorded on an Archaic site. The remainder were found on sites of unknown aboriginal affiliation.

The twelve hammerstones recorded in the Devils Lane Area are made from limestone (n=5), quartzite (n=1), chert (n=5) and chaledony (n=1). The chert and chaledony hammerstones are made from small nodules and cobbles of the same materials found in the chipped stone tool assemblage. The hammerstones range from globular to disc shaped and vary between 7 and 9 cm in their longest dimension. All except two of the hammerstones in the Devils Lane Area occur on Anasazi sites or sites that have an Anasazi component. The other two occur on sites of unknown age and aboriginal affiliation.

### Manos

Manos are the most common type of groundstone tool associated with sites in both survey areas; a total of 67 was recorded, 49 on sites and 4 as isolated finds in the Salt Creek Pocket Area, and 14 on sites in the Devils Lane Area. Manos occur on a slightly higher percentage of sites in the former area (23.7%) than the latter (14.3%), but the average number of manos on sites with manos is approximately two in both areas.

Fifty-two of the manos on sites are of the one-hand variety; 1 other is a two-hand mano fragment and 10 are indeterminate specimens. One two-hand mano and three one-hand manos were recorded as isolated finds in the Salt Creek Pocket Area. If two-hand manos are a feature of the corngrounding complex of the Anasazi as indicated throughout southwestern literature, a higher number should have been found considering the number of Anasazi

sites recorded. The scarcity of two-hand manos on Anasazi sites in both survey parcels suggests that the Anasazi may not have followed the traditional pattern in this area or were less dependent on corn than in some other areas. This issue warrants further investigation. The two-hand mano recorded on a site is made from brown quartzite, has ground margins and two reworked grinding surfaces. It is from a site of unknown age and affiliation in the Salt Creek Pocket Area.

Among the 52 one-hand manos, 19 (36.5%) are unifacially ground and 25 (48.1%) are bifacially ground; three others (5.8%) have 3 to 5 grinding facets. The remaining 5 are too worn to determine the number of grinding faces. The amount of wear, presence of resharpening and presence of formal margin shaping were recorded for approximately one-third of the one-hand specimens. Among this group, well-worn manos predominate, with only a few minimally and moderately worn tools. More than half are formally shaped by pecking and/or grinding and resharpened by pecking the grinding surface. These trends may or may not reflect the assemblage as a whole because the sample is not statistically representative.

Forty-one (79%) of the one-hand manos are made from locally available sandstones in the off-white to reddish color range. Seven specimens are made from pink-purple, gray or brown quartzite probably derived from terraces along the Colorado River and two others are made from andesite indicating an Abajo Mountain source, possibly Indian Creek. Material type of the two others is unknown.

### Metates

Thirty-six metates were recorded in site association, 23 in the Salt Creek Pocket Area and 13 in the Devils Lane Area; 3 more were recorded as isolated finds, 2 in the former area and 1 in the latter. Of the specimens found on sites, 6 are slab metates, 12 are basin metates, 2 are trough metates and 16 are indeterminate

fragments. Both of the trough metates and all of the slab metates are from the Salt Creek Pocket Area; basin metates were found in both survey parcels.

All 36 of the metates are made from locally available, very fine to coarse sandstone in the white, yellow, gray and purple color ranges. None appear to have been bifacially ground. The amount of wear ranges from minimal to extreme, with an approximately equal proportion in each category. The majority show little or no evidence of resharpening by pecking the surface. The assemblage appears expedient for the most part, with very few specimens exhibiting evidence of formal shaping by pecking or grinding.

### Maul

A one-hand mano on an Anasazi site in the Salt Creek Pocket Area had been reworked into a maul by pecking a halting groove around the middle. This specimen is made from sandstone, has battered ends and measures 7.5 cm long, 7.0 cm wide and 5.5 cm thick.

### Ceramic Artifacts

by William A. Lucius

Ceramic identifications were accomplished during fieldwork due to the non-collection strategy outlined by the contract. A total of 114 sherds was noted in the survey areas, and 3 broken bowls were recorded as IF 29 in the Devils Lane Area (Figure 24). Table 14 presents the site ceramic data by type and vessel form. Jar sherds predominate in terms of raw counts, primarily due to the occurrence of numerous small fragments from individual gray and white ware jars. Sherd counts primarily reflect vessel breakage, and as such are a poor measure of the actual number of vessels in each category. Bowl forms are, therefore, more common than the table suggests. The frequency of Kayenta-derived sherds observed during the survey is consistent with the occasional occurrence of these sherds in the extant collections.

## SUMMARY OF THE ARTIFACTS AND FEATURES



Figure 24. McElmo Black-on-white and Mesa Verde Black-on-white bowls recorded as Isolated Find 29 in the Devils Lane Area.

Most of the pottery identified during the survey is indicative of a Pueblo II/III utilization of the survey areas by Mesa Verde Anasazi. With the exception of five Chapin Gray sherds and one Mancos Gray sherd, the identifiable specimens are consistent with a late Pueblo II through early Pueblo III presence (A.D. 1000 to 1250). The exceptions suggest minimal use of the area by late Basketmaker III-Pueblo I and early Pueblo II populations.

In addition to the field identifications, an informal review of ceramic collections stored at the Needles District and at the National Park Service repository in Moab was conducted after completion of the fieldwork. Although more detailed analyses of these artifacts is desirable, the author's specialization in ceramic artifacts allows some statements about the cultural and temporal affiliation of the populations responsible for their deposition in the archaeological record.

Pottery for which a regional affiliation could be determined indicates that the majority of the pottery in the collections is of Mesa Verde Anasazi manufacture (cf. Breternitz et al. 1974), with the exception of occasional Kayenta-derived items and two sherds of Jeddito Black-on-yellow. This last named type is indicative of Pueblo IV manufacture in the Hopi area of northern Arizona (Colton 1956), and its presence in southeastern Utah surface collections is thought to reflect its use by Shoshonean groups (Lucius 1983:123). The existing collections parallel the survey observations in that there is an overwhelming preponderance of McElmo and Mesa Verde Black-on-white sherds and significantly minor occurrences of Pueblo II sherds. Distinctive Pueblo I red and gray wares are absent.

An informal microscopic temper type identification of sherds in the extant collections revealed that many of the gray and white ware sherds contain a dark, sherd-tempered paste which Rudy (1955)

## SUMMARY OF THE ARTIFACTS AND FEATURES

Table 14. Summary of sherds recorded on sites during the 1985 survey.

Ceramic Type	Indeterminate		Vessel Form		Jar		Total	
	n	%	n	%	n	%	n	%
Gray Ware								
MESA VERDE GRAY WARE								
Chapin Gray (Basketmaker III-Pueblo I)	-	-	5	100.0	-	-	5	4.4
Mancos Gray (Pueblo II-Pueblo III)	-	-	-	-	1	100.0	1	0.9
Mancos Corrugated (Pueblo II-Early Pueblo III)	-	-	-	-	1	100.0	1	0.9
Dolores Corrugated (Pueblo II-Pueblo III)	-	-	-	-	2	100.0	2	1.8
TUSAYAN GRAY WARE								
Tusayan Corrugated (Pueblo II-Pueblo III)	-	-	-	-	1	100.0	1	0.9
INDETERMINATE GRAY WARE								
Plain body sherds (Basketmaker III-Pueblo III)	12	44.4	-	-	15	55.6	27	23.7
Corrugated body sherds (Pueblo II-III)	3	13.0	-	-	20	87.0	23	20.2
White Ware								
MESA VERDE WHITE WARE								
Mancos Black-on-white (Pueblo II)	2	40.0	1	20.0	2	40.0	5	4.4
McElmo Black-on-white (Pueblo III)	-	-	10	90.9	1	9.1	11	9.6
Mesa Verde Black-on-white (Pueblo III)	-	-	2	66.7	1	33.3	3	2.6
McElmo or Mesa Verde Black-on-white (Pueblo III)	-	-	1	33.3	2	66.7	3	2.6
TUSAYAN WHITE WARE								
Black Mesa Black-on-white (Pueblo II)	1	100.0	-	-	-	-	1	0.9
INDETERMINATE WHITE WARE								
Indeterminate body sherds (Basketmaker III-Pueblo III)	8	25.8	4	12.9	19	61.3	31	27.2
Total	26	22.8	23	20.2	65	57.0	114	100.0

described as being characteristic of the Beef Basin area. The presence of sherd temper in corrugated vessels is unusual in most areas of the Mesa Verde region, indi-

cating that these items may represent a distinct manufacturing locale in the Beef Basin area.

Field analysis of sherds recorded during the survey also revealed the presence of the dark paste. The implication is that there is some connection between Anasazi groups in the Beef Basin area and the Anasazi groups in the Needles District. However, the nature of this connection is not clear and awaits further study. It is also based on the assumption that the clay source for the dark paste is somewhere in the Beef Basin area and that similar clays were not available in the Needles District. This is an assumption that needs to be tested through identification of clay sources throughout the Needles District and the Beef Basin area; such research is beyond the scope of the current project.

## Features

A total of 99 prehistoric features was located on 50 prehistoric sites and components. Features occur on a significantly higher percentage of sites in the Devils Lane Area than the Salt Creek Pocket Area (56.1% versus 26.7%) and are also more numerous ( $n = 58$  and  $\bar{x} = 2.52$  versus  $n = 41$  and  $\bar{x} = 1.52$ ). In part, this difference reflects the abundance of rock art panels in the Devils Lane Area, but may also attest to a more sedentary occupation in parts of the Devils Lane Area, particularly Chesler Canyon Wash.

The prehistoric features range from those which took only a few minutes to create, such as hearths, awl sharpening grooves and rock alignments, to those indicative of a moderate time expenditure, such as dry-laid walls, stone circles and dry-laid rooms. No features indicating a great investment of time—such as room blocks, kivas or wet-laid rooms—were found in either survey parcel, clearly reflecting the ephemeral nature of the occupation.

Thirty-five historic features were found on five historic sites and components. Four historic sites and components in the Salt Creek Pocket Area contain 29 of these features; the other six are found on one

historic site in the Devils Lane Area. The features range from cairns and hearths, indicative of a minimum labor investment, to corrals, fences, gates and large earthen dams. The latter represent a substantial investment of time, and some exhibit remodelling, indicating that they were intended for and used over an extended period of time. Tables in Appendix D show the number and type of features recorded on each site.

## Prehistoric Features

### Hearths

Sixteen prehistoric hearths were noted on 13 sites during the survey, 7 in the Salt Creek Pocket Area and 6 in the Devils Lane Area. All but two of the sites have only one hearth; the two multiple-hearth sites are located in the Devils Lane Area. Of the 16 hearths, only 4 exhibit formal use of slab lining, an example of which is shown in Figure 25. The remainder are unlined, informal, circular stains of ashy soil, sometimes accompanied by charcoal and/or burned pieces of sandstone. On the average, the slab-lined hearths seem to be slightly larger than the unlined variety in cases where the unlined hearths have not been spread out by erosion.

As noted in Chapter 4, the slab-lined hearths are attributed to an Archaic affiliation; one of the slab-lined hearths yielded a Late Archaic date (see Chapter 7). The unlined hearths occur on sites of Archaic, Anasazi and unknown aboriginal affiliation, and may not be diagnostic of a particular cultural group or temporal period.

The absence of slab-lined hearths in the Salt Creek Pocket Area is somewhat surprising given the presence of Archaic sites, the presence of slab-lined hearths in the Devils Lane parcel and the abundance of such hearths in the Maze District of Canyonlands (Lucius 1976); more survey may ultimately reveal such features in the general Salt Creek Pocket Area. If not, perhaps the additional inventory will identify



Figure 25. Slab-lined hearth at site 42SA17141 in the Devils Lane Area. This hearth is radiocarbon dated to  $2080 \pm 60$  B.P. (130 B.C.).

the cultural, temporal or functional phenomena responsible for their lack.

### Smoke Blackening

Smoke blackening was observed on the roof of three rockshelters or overhangs on Anasazi sites in the Devils Lane Area. The blackening does not coincide with the location of hearths visible on the surface, but all of the sites appear to have been field camps or habitation sites where hearth features were probably present.

### Awl Sharpening Grooves

A group of 15 parallel awl sharpening grooves was found on a sandstone slab adjacent to a masonry room on an Anasazi habitation site in the Devils Lane Area. The grooves are quite narrow and all but one are shallow.

### Middens

Midden areas occur at 16 sites: 12 in the Salt Creek Pocket Area and 4 in the Devils Lane Area. In the former survey parcel, middens are found on two Anasazi, one Archaic, two multicomponent Archaic/Anasazi and seven aboriginal sites. Three of the four middens in the Devils Lane parcel are on Anasazi sites, whereas the fourth is on a site of unknown aboriginal affiliation. Overall middens are most common on the Anasazi sites and sites with Anasazi components. Middens, however, may be more common on the Archaic sites than these data indicate because some of the sites of unknown age and cultural affiliation could be Archaic.

The middens are generally characterized by ash and organically stained sediments. Some contain charcoal and/or burned and oxidized sandstone. They vary considerably in depth and extent, and some are buried, and thus protected, by deposits of postabandonment sand.

## SUMMARY OF THE ARTIFACTS AND FEATURES

## Rock Art

by Nancy J. Hewitt

Thirty-four panels of rock art were discovered on 17 sites, 9 in the Devils Lane Area and 8 in the Salt Creek Pocket Area. Pictographs are more than twice as common as petroglyphs, both in terms of the number of sites where present and the number of panels occurring on any one site. Also, rock art is much more common in the Devils Lane Area than the Salt Creek Pocket Area, occurring on 22.0% and 7.9% of the sites in these two areas, respectively. This difference is not because of the lack of suitable faces for executing rock art in the Salt Creek Pocket Area, but may be related to rock art occurring along major travel routes through rugged areas, a characterization which aptly describes Devils Lane.

Rock art occurs on sites with structures, middens and artifact scatters, but also constitutes the sole remains on a number of other sites. Pictographs and petroglyphs co-occur on only one site, an Archaic site in the Devils Lane Area. Three named styles of rock art were found during the survey, Barrier Canyon, Glen Canyon Linear and Southern San Rafael Fremont Style. In addition, the hands motif and elements of the so-called "Canyonlands Anasazi" Style were also recorded.

**Barrier Canyon Anthropomorphic Style**

The rock art in Canyonlands National Park has long captured the attention and imagination of visitors and archeologists alike. The most impressive panels are those displaying the nearly life-size, ethereal anthropomorphs of the Barrier Canyon Style. Eight sites displaying this style were recorded during the 1985 Canyonlands survey (Table 15). Four of these sites are located in the Salt Creek Pocket Area; the other four are in the Devils Lane Area. Three of the Devils Lane panels had been recorded previously; all the other panels were recorded for the first time.

These panels consist of 1 to 21 anthropomorphs, although most of the panels

have only 1 or 2 figures. Bighorn sheep and centipedes are associated with some of the figures (Figure 26). All of the figures are painted with the usual red and buff paints (Figure 26b) with the exception of those at site 42SA17174 which are pecked (Figure 26a).

Based on several lines of evidence, Schaafsma (1971, 1980) suggests that this style is the work of Archaic artists. She has also noted that most Barrier Canyon Style panels are located in isolated areas away from habitations and, therefore, an association with other cultural materials that might help confirm the cultural affiliation and age of the art has not been possible (Schaafsma 1971).

Two of the Barrier Canyon Style panels in the Salt Creek Pocket Area, sites 42SA17090 and 42SA17092, are located in small overhangs that also contain the remains of occupation. Materials recorded on the surface of site 42SA17090 include three one-hand manos, one basin metate, a biface, a uniface and five modified flakes. A sparse midden was also recorded. Site 42SA17092 contains a richer assemblage including one Sand Dune Side-notched projectile point, six bifaces, one chopper, three cores, one hammerstone, two basin metates, four one-hand manos and numerous mano and metate fragments. A sparse midden of ash, charcoal and burned sand was also recorded. While it is difficult to prove that the rock art at these sites was executed by the same people who camped in the shelters, the association is certainly suggestive. The results of testing at one of these sites are reported in Chapter 7.

**Glen Canyon Linear Style**

A particularly exciting outcome of the 1985 survey was the discovery of four rock art panels containing figures of the Glen Canyon Linear Style. This style had not been previously recorded in the Needles District and only one site with this style has been reported in Canyonlands National Park (Hogan et al. 1975).

Three of the four sites having Glen Canyon Linear Style figures also have

## SUMMARY OF THE ARTIFACTS AND FEATURES

Table 15. Rock art data by site.

Survey Parcel	Site Number	Site Cultural Affiliation	Rock Art Styles Present	Method of Execution
DL	42SA1448	Anasazi	Stylized hands Dots, anthropomorph Barrier Canyon	Pictograph Pictograph Pictograph
DL	42SA1450	Archaic Fremont/Anasazi	Southern San Rafael Fremont Negative and positive hand-prints, feet, stylized hands	Pictograph Pictograph Pictograph
DL	42SA1996	Archaic	Barrier Canyon	Pictograph
DL	42SA16825	Archaic/Anasazi Anasazi	Barrier Canyon Stylized hand	Pictograph Pictograph
SC	42SA17090	Archaic/Anasazi	Barrier Canyon	Pictograph
SC	42SA17092	Archaic	Barrier Canyon	Pictograph
SC	42SA17099	Archaic	Barrier Canyon	Pictograph
DL	42SA17105	Archaic	Barrier Canyon Burden-basket figure	Pictograph Petroglyph
DL	42SA17106	Archaic	Glen Canyon Linear Flute player, burden-basket figures, mountain sheep, birds, anthropomorphs, zoomorphs, geometric designs	Petroglyph Petroglyph Petroglyph
DL	42SA17108	Anasazi	Stylized hands	Pictograph
DL	42SA17115	Anasazi	Stylized hands	Pictograph
DL	42SA17144	Anasazi	Faint white zoomorphs and one small, very faint possible ghost figure	Pictograph
SC	42SA17171	Anasazi	Angular white clay splatters	Pictograph
SC	42SA17174	Archaic	Barrier Canyon Glen Canyon Linear	Petroglyph Petroglyph
SC	42SA17187	Archaic/Anasazi	Glen Canyon Linear Triangular-bodied anthropo- morphs with splayed hands	Petroglyph Petroglyph
SC	42SA17200	Archaic/Anasazi	Glen Canyon Linear	Petroglyph
SC	42SA17221	Anasazi	Anthropomorphs, zoomorph, geometric designs	Pictograph

NOTE: DL = Devils Lane Area, SC = Salt Creek Pocket Area.

other types of rock art (Table 15). Two of the sites contain probable Anasazi rock art; the other site has Barrier Canyon Style anthropomorphs. The fourth site is not associated with other styles of rock art but contains Anasazi pottery. Examples of Glen Canyon Linear Style petroglyphs are shown in Figure 27.

The age of this style is not clear, but the extensive repatination and weathering of all such figures led Turner (1971) to suggest that this style is quite old and predates pottery. However, some of the sites in Glen Canyon displaying this style are spatially associated with pottery dating between A.D. 800 and 900. Schaafsma (1980:75) suggests that these associations



SUMMARY OF THE ARTIFACTS AND FEATURES

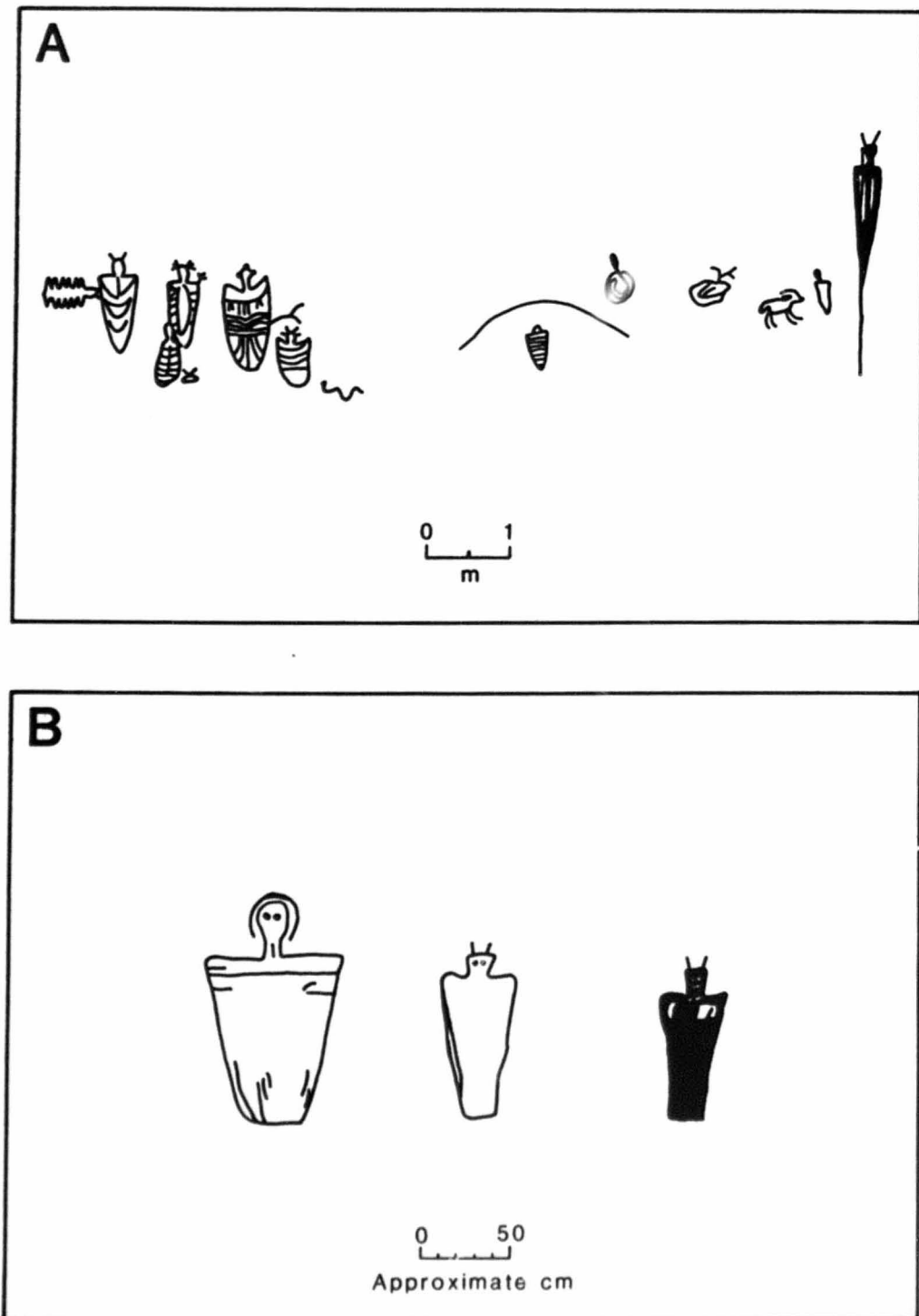


Figure 26. Barrier Canyon Style rock art in the Salt Creek Pocket Area. a, site 42SA17174; b, site 42SA17090.



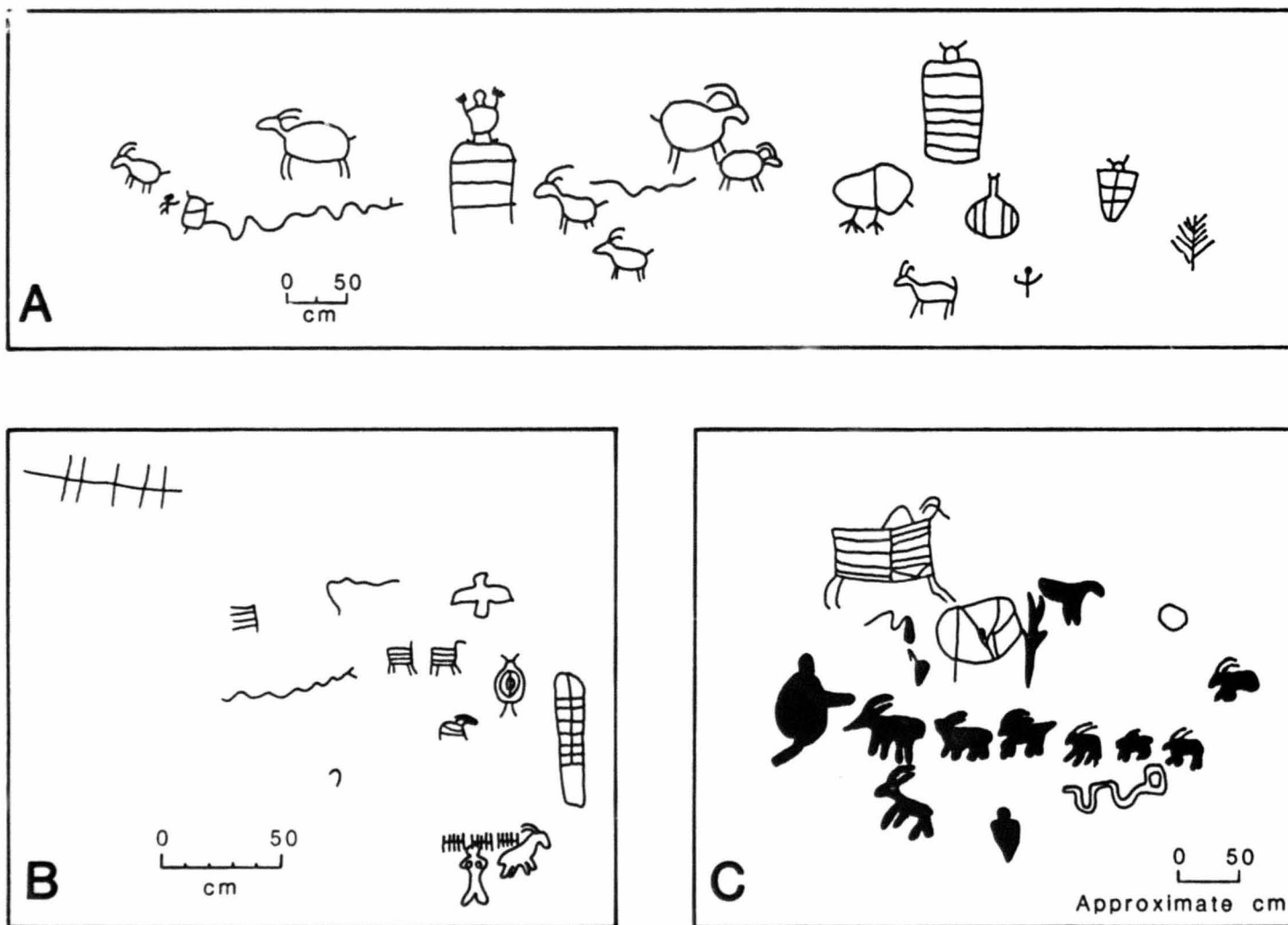


Figure 27. Glen Canyon Linear Style rock art in the Salt Creek Pocket Area. a, site 42SA17200; b-c, site 42SA17187.

represent a later reoccupation of the same sites. She also notes that this style clearly predates all other styles identified in Glen Canyon.

In a further attempt to date this Linear Style, Schaafsma (1980:75-76) cites an example of a site at Sand Island on the San Juan River that has Linear Style figures high on a cliff above the scar of an ancient dune; within the scar are Basketmaker II San Juan Anthropomorphic Style figures. This is a clear case of relative dating and the evidence indicates that the Linear Style is older than the Basketmaker style. At another site on the San Juan near Butler Wash, a Linear Style figure is superimposed by a Basketmaker figure, further evidence that the Linear Style has a prehistoric origin (Schaafsma 1980:75).

Schaafsma (1980:109) concludes that the Glen Canyon Linear Style had its origins among Archaic peoples but endured into the Basketmaker II period; she has assigned the style a time range of 700 B.C.-A.D.100. The four sites in the Needles District that display this style neither refute nor confirm this chronological placement. The association of some of these panels with Anasazi materials may be the result of site reoccupation. The occurrence of the Linear Style with the Barrier Canyon Style could also indicate use of the same site by different cultural groups. The reuse of certain rock panels is not an uncommon practice. Witness for example "Newspaper Rock" in Indian Creek Canyon just east of the Canyonlands National Park boundary. This panel contains motifs attributed to the Fremont, Anasazi and Historic Ute. It also appears to have petroglyphs of the Glen Canyon Linear Style (Noxon and Marcus 1985).

If this is a Late Archaic/early Basketmaker style, it is considerably different from the Barrier Canyon Archaic Style. Reasons for these differences would at this point be very speculative, but some possibilities include a temporal difference, a cultural difference (i.e., two different, but

contemporaneous groups) or a functional difference. The answer to this question would require an in-depth regional study of these two types; such an endeavor is beyond the scope of the current research.

#### Other Early Rock Art Styles

Three other Archaic rock art styles that might have been encountered on the basis of their presence in nearby areas (cf. Noxon and Marcus 1982, 1985) were not observed in either survey area. These are the Great Basin Abstract Style, the Chihuahuan Polychrome Abstract Style and the Great Basin Representational Style.

#### San Juan Anthropomorphic Style

One distinctive early Anasazi rock art style, the San Juan Anthropomorphic Style, was not observed at any sites recorded during the 1985 survey. This style has been attributed to Basketmaker II horticulturalists (Schaafsma 1980:109), and its absence in this area may be significant as no sites were recorded that contained other materials identifiable as Basketmaker II. Previous archeological surveys of Canyonlands have identified very few definite Basketmaker II sites (Griffin 1984; Lucius 1976; Osborn et al. 1985; Sharrock 1966). However, these sites are difficult to recognize on the surface and without certain diagnostic items, such as projectile points, they could be classified as Archaic or simply aboriginal of prehistoric age. In addition, early Basketmaker sites located in alcoves might have been destroyed or concealed by later Puebloan occupation of the alcoves. This is a problem that can only be addressed through excavation. No extensive excavations have taken place within the park that would add knowledge to this problem. Castleton (1979:Fig. 8.51) discusses a San Juan Style anthropomorph located near Cowboy Cave and the Maze District. Clearly, more work needs to be done on defining the nature of Basketmaker II remains in Canyonlands.

#### Faces Motif Anthropomorph Style

Another rock art style that was not identified on any sites recorded during the

1985 survey is the so-called Faces Motif. The origin and exact distribution of this style are not clear. Faces Motif panels occur in and east of the Needles District (Griffin 1984; Noxon and Marcus 1985), and one panel is known from Island-in-the-Sky (Castleton 1979:302-305). The absence of this style in the 1985 survey areas seems to indicate that its distribution is limited to portions of the Needle District; in short, it is not a district-wide phenomenon.

Noxon and Marcus (1985) note that the Faces Motif is usually associated with Anasazi structural sites. If this is true, then its absence in the Salt Creek Pocket and Devils Lane areas is not surprising since few sites of this type are found in these areas. This lack may lend some credence to their argument that the Faces Motif is Anasazi in origin, although the style itself may have been borrowed from the Fremont culture (Noxon and Marcus 1985).

#### Unnamed Anasazi Rock Art

A single Anasazi rock art style that can be applied to this part of Utah is hard to define. Schaafsma's (1980) general impression of post-Basketmaker II rock art is a trend away from the large, immobile, stylized anthropomorphs to smaller, more lifelike forms. Small, triangular-bodied anthropomorphs with turned-out feet and arms angled out from pointed shoulders come into vogue as do stick figures engaged in a variety of ordinary activities. Flute players, birds with crescent-shaped or semicircular bodies and hunt scenes with bowmen and deer or sheep become common elements.

Noxon and Marcus (1985) have defined a "Canyonlands Anasazi Style" that is based on Schaafsma's generalizations with some additions. This style includes sticklike anthropomorphs engaged in day-to-day activities such as walking with burden-baskets, holding implements or running. Headaddresses are rare on these figures. Tapered-bodied anthropomorphs sporting headaddresses of short hornlike

appendages are less common. Other elements that Noxon and Marcus feel are associated with this style include handprints (negative, positive, stylized, striated and patterned), shield-bodied anthropomorphs and geometric designs.

Three sites recorded during the 1985 survey exhibit such motifs. Site 42SA17105 in Devils Lane has a burden-basket figure. Site 42SA17106 in Devils Lane includes burden-basket figures, a flute player and mountain sheep with bifurcated feet. Site 42SA17187 in Salt Creek Pocket has a panel with two pecked, triangular-bodied anthropomorphs with three-fingered hands at the end of slightly angled arms. The lower portions of these figures are either missing or were never depicted. Both figures have odd-shaped heads; one is blocky and hammerlike, the other has four horns—two point upward, two point downward (Figure 28). Two crudely depicted mountain sheep and several series of small dots accompany the anthropomorphs.

Five sites in Devils Lane have painted handprints, the stylized hand being the most common. This style consists of nested U's (Figure 29). Although Noxon and Marcus (1985) consider this motif part of the Canyonlands Anasazi Style, they do not divulge their reasons for making this affiliation. Schaafsma (1971:62) calls this style "striped" and reports its occurrence in Barrier Canyon at site 42WN813 (Anderson 1978:105). She suggests that the solid and striped handprints in Salt Creek may be of Pueblo origin because of the presence of an associated pottery design motif.

In Devils Lane, two of the five sites with the stylized hand motif are not associated with other rock art, features or artifacts that might suggest cultural affiliation. At a third site, hands co-occur with some painted dots and an anthropomorph. At the fourth site, a single stylized hand motif is on a panel with Barrier Canyon Style anthropomorphs. At the fifth site, these hands dominate the six panels which also display Barrier Canyon Style and Fremont style anthropomorphs.

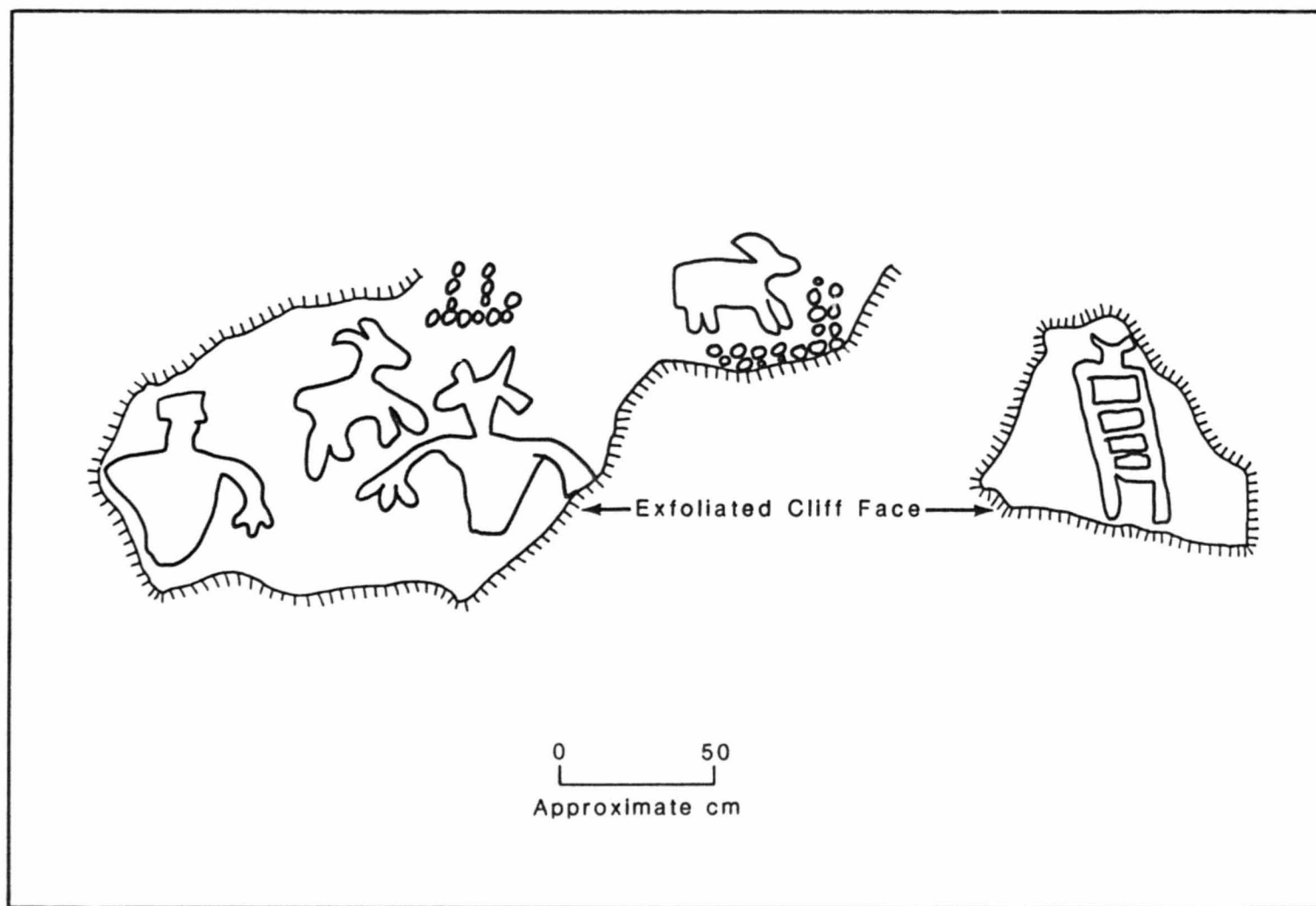


Figure 28. Possible Anasazi petroglyphs at site 42SA17187 in the Salt Creek Pocket Area.

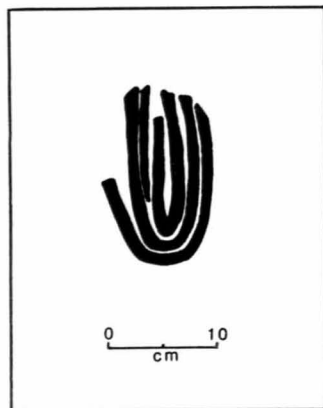


Figure 29. Stylized, painted handprint at site 42SA17115 in the Devils Lane Area.

No handprints of this style were associated with Anasazi materials. It should also be noted that none of these stylized hands were recorded in the Salt Creek Pocket Area.

#### Southern San Rafael Fremont Style

This style of Fremont rock art is found in southeastern and south central Utah and has been dated to the A.D. 700-1200 time period (Schaafsma 1980:165). Only one site contained anthropomorphs that could be identified as being of the southern San Rafael Fremont Style. These two figures are on one of six panels at site 42SA1450 (Figure 30). Both figures have long tapered bodies that appear to end in kilts. Long arms dangle from the pointed shoulders. The larger of the two figures has feet that point out to the sides; the smaller figure does not appear to have feet. The larger figure has a blocky head with narrow horns or feathers and is 40 cm tall. The other figure appears to have one

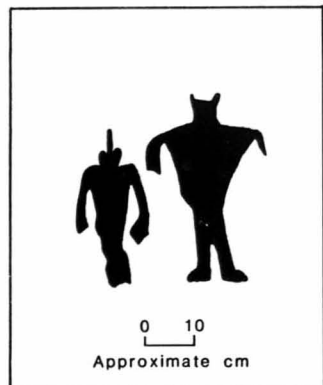


Figure 30. Southern San Rafael Fremont anthropomorph style pictographs at site 42SA1450 in the Devils Lane Area.

feather emerging from its head and is 31 cm tall. Two Barrier Canyon Style anthropomorphs and numerous Anasazi handprints occur on the same panel as these Fremont style figures.

#### Slab Cists

Site 42SA17095, an Anasazi field camp in the Salt Creek Pocket Area, exhibited two isolated storage cists (Figure 31). These cists are constructed of unshaped sandstone slabs and appear to have been constructed free-standing on a sandstone outcrop, although their collapsed condition may indicate that they were originally constructed in sand that has since been removed by wind action. Similar features were recorded by P-III Associates on two sites in the northern end of the San Rafael Swell (Tipps 1988). The only other slab cist recorded during the project is on an Anasazi site in the Devils Lane Area. This cist consists of three upright vertical slabs

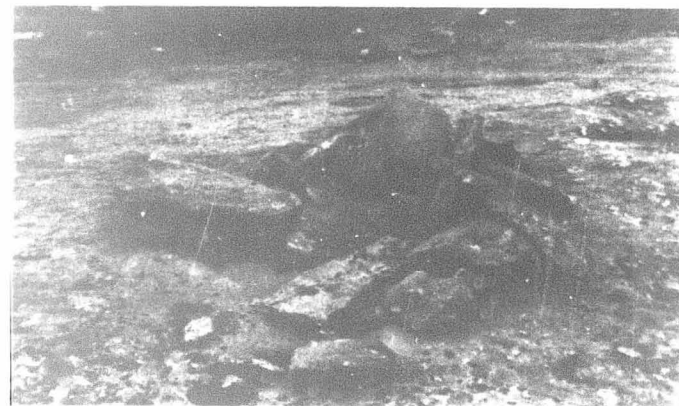


Figure 31. Collapsed slab storage cist at site 42SA17095 in the Salt Creek Pocket Area.

that enclose a natural crack in a sandstone wall, creating a small storage area.

#### Walls

One of the common features observed during the survey were stone masonry walls. These walls are generally dry-laid and constructed of unshaped stacked sandstone slabs or blocks. They presently range from 2 to 5 courses high and 0.4 to 1.4 m long. In all cases, the amount of labor expended for their construction was minimal, and the generally fragmentary and eroded condition precludes any need for stabilization. Their positioning perpendicular to the back walls of shallow overhangs indicates that they were used to partition sheltered living, work or storage areas, rather than support loose fill as in the case of retaining walls; some may have served as wind-breaks whereas others are probably the eroded remnants of former surface rooms.

A total of six masonry walls was found, two (on two sites) in the Salt Creek Pocket Area and four (on three sites) in the Devils

Lane Area. All five sites with masonry walls are attributed to the Anasazi, three based on the presence of ceramic artifacts and two based on the presence of the walls and/or other masonry features such as surface rooms.

#### Stone Circles

Stone circles were found on two sites in the Salt Creek Pocket Area. One of the sites is an Anasazi sherd and lithic scatter with features, the other is a site of unknown age and affiliation. On the former site, the feature is roughly D-shaped in plan and measures 3.7 m across in both directions. It is outlined by one course of stones and appears to be totally surface oriented. There is a possibility that this feature represents a historic or modern tent ring.

The stone ring on the second site, 42SA17223, is even more enigmatic. It consists of two concentric stone rings composed of small sandstone fragments (Figure 32). The outer ring is approximately 3 m in

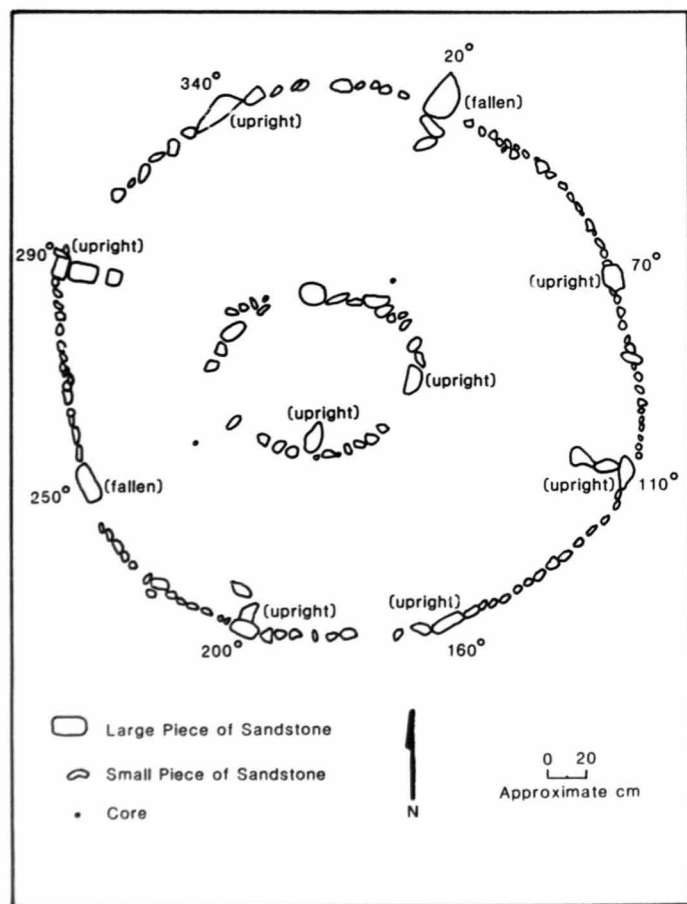


Figure 32. Stone circle feature at site 42SA17223 in the Salt Creek Pocket Area.

diameter, whereas the interior ring is about 0.8 m across. There are eight upright slabs spaced along the outer ring, four large ones and four small ones. The large uprights are spaced at 90° intervals and occur at 20°, 110°, 200° and 290°. The smaller uprights are spaced at 50° intervals in a clockwise direction from the nearest large upright (and hence 40° in a counter-clockwise direction from the nearest upright), and therefore lie at the following compass readings 70°, 160°, 250° and 340°. Adjacent to each of the large upright slabs is a rock alignment that points towards the center of the circle much like a spoke; these alignments are short, however, and do not reach the interior ring. There are two upright slabs along the interior ring, one aligned with the large upright at 110° and the other aligned with the large upright at 200°. The feature does not have any associated charcoal or ash. Two red chert cores are located adjacent to the outside of the inner ring.

This precisely laid out stone ring is similar to a Plains medicine wheel and may have had astronomical uses, if indeed it is prehistoric. However, it is located in what appears to be an artificially flattened area that in addition to lacking plant growth, also lacks cryptogamic soil development which is otherwise common throughout the area. Therefore, it is very possible that it was made by members of a group known to frequent the area and leave artifacts and features associated with vision quests.

#### Granaries

The remains of two highly deteriorated possible granaries were found on a multi-component Archaic and Anasazi site in the Salt Creek Pocket Area. These granaries were abutted to a sandstone cliff and made of unshaped sandstone blocks and slabs set in an adobe mortar. Both are presently marked by a single wall and neither retains evidence of roofing.

#### Surface Rooms

A total of 14 masonry rooms was recorded on 8 Anasazi sites: 3 rooms on 2 sites in the Salt Creek Pocket Area and 11 rooms on 6 sites in the Devils Lane Area. Relative to the number of sites recorded, masonry rooms are much more common in the latter area, occurring on 14.6% (as opposed to 2.0%) of the sites. All 14 of the masonry rooms are located in a rockshelter or under some kind of overhang, and all utilize the back wall of the shelter as one of the walls.

For the most part, the surface rooms are insubstantial and have the appearance of having been hastily constructed. Some of the rooms utilize outcrops and roof spall debris as walls, whereas others incorporate such natural stones into constructed walls. The constructed walls generally consist of horizontal masonry, though two structures have walls that are partially or wholly formed by upright sandstone slabs. The masonry walls are dry-laid and built of unshaped sandstone blocks and slabs stacked in an uncoursed fashion. The walls are typically a single stone wide, i.e., of simple wall construction. At present, most walls are two to three courses high with a few having four and one having as many as eight. The amount of rubble and debris in the vicinity of the various structures suggests that the walls were never more than a meter high, and most were probably lower. None of the structures has an intact roof and, indeed, no evidence is present that there was roofing other than that provided by the overhang.

Room function is somewhat difficult to address based on the surface evidence. One of the structures coincides with smoke blackening on the wall of the overhang suggesting that it was probably used for habitation. Most of the other rooms were probably also used for habitation, or possibly work areas, because the insubstantial nature of the construction is incongruent with use for storage. Room size varies from a minimum of 2.28m<sup>2</sup> to a maximum of 10.31m<sup>2</sup>, with the majority of rooms having

## SUMMARY OF THE ARTIFACTS AND FEATURES

between 2 and 3m<sup>2</sup>, 4 and 5m<sup>2</sup> or more than 9m<sup>2</sup> of interior space. These variations in room size suggest functional differences, which unfortunately, cannot be addressed with the data currently available.

### Bridges

Two rather unusual features, wood and stone bridges, were found on an Anasazi masonry architecture site (42SA17118) in Devils Lane. These bridges span the gaps between three small ledges upon which are constructed small masonry rooms. The bridges are informal features constructed by stacking unshaped sandstone slabs across pinyon or juniper posts bridging the gaps. They have every appearance of being prehistoric and are still quite sturdy. A tree-ring sample from one of the posts yielded a  $\tau$  date of A.D. 1131 (Tree Ring Laboratory UWM-291), meaning that there is no way of estimating how far the last ring is from the true outside and therefore, that the post was cut sometime after A.D. 1131.

### Historic Features

A total of 35 historic features—3 hearths, 1 cairn, 13 fences, 7 gates, 3 corrals, 1 holding pen, 2 walls, 2 historic rooms and 3 dams—was recorded on 5 historic sites and components. Four of the sites and 29 of the features are located in the Salt Creek Pocket Area; the other 6 features occur on 1 site in the Devils Lane Area.

The cairn is located on a prehistoric site and is associated with a mining claim stake. Two of the hearths are rock ringed; the other is associated with sandstone slabs and may have once been ringed by stone. These hearths are located on sites with fences and/or corrals and are probably related to ranching activities.

The 13 fences all relate to cattle ranching activities and are located on three sites in the Salt Creek Pocket Area. Five of the fences wall off the mouth of a natural cove

thereby creating a corral; a sixth divides such a corral into two smaller components. The other seven fences limit access from a corrals onto adjacent sandstone ridges, extend into the interior of a corral, or mark the boundary of a pasture or property line. The fences display two main construction styles: six of the fences are constructed of posts connected by four to five strands of barbed wire, generally attached with wire staples. The seven other fences are composed of pinyon, juniper and, in one case, aspen logs, stacked stone and/or brush. One such fence was constructed by placing pinyon and juniper logs lengthwise between uprights, intermittently lashing them together with bailing wire and weaving brush between the larger supports. Gates were found in two of the fences walling off alcoves to create corrals, and one other gate was found at the end of another fence line. A holding pen and possible loading area are located inside of one of the corrals.

Three formal corrals were recorded on site 42SA1451. Two of these are rectangular in shape and constructed of poles and barbed wire; one measures 55 by 38 m whereas the other is 14 by 15 m. These two corrals share a common wall and between them have four gates. The third corral was formed by building a curved brush wall in front of a small alcove, thereby walling it off. No gate was visible.

Rock walls were found on two sites, one in the Salt Creek Pocket Area and one in the Devils Lane Area. The one in Salt Creek is located under an overhang on a ledge and abuts the back wall of the shelter. It is dry-laid and constructed of unshaped pieces of tabular sandstone, neatly stacked in even courses. This wall may have served as a windbreak. The remaining features—two rock walls, one rock room and three earthen dams—are found on site 42SA17195 in the Devils Lane Area (Figure 33).

The rock room is rectangular in shape and was constructed by abutting a squared-off, C-shaped, dry-laid, stacked

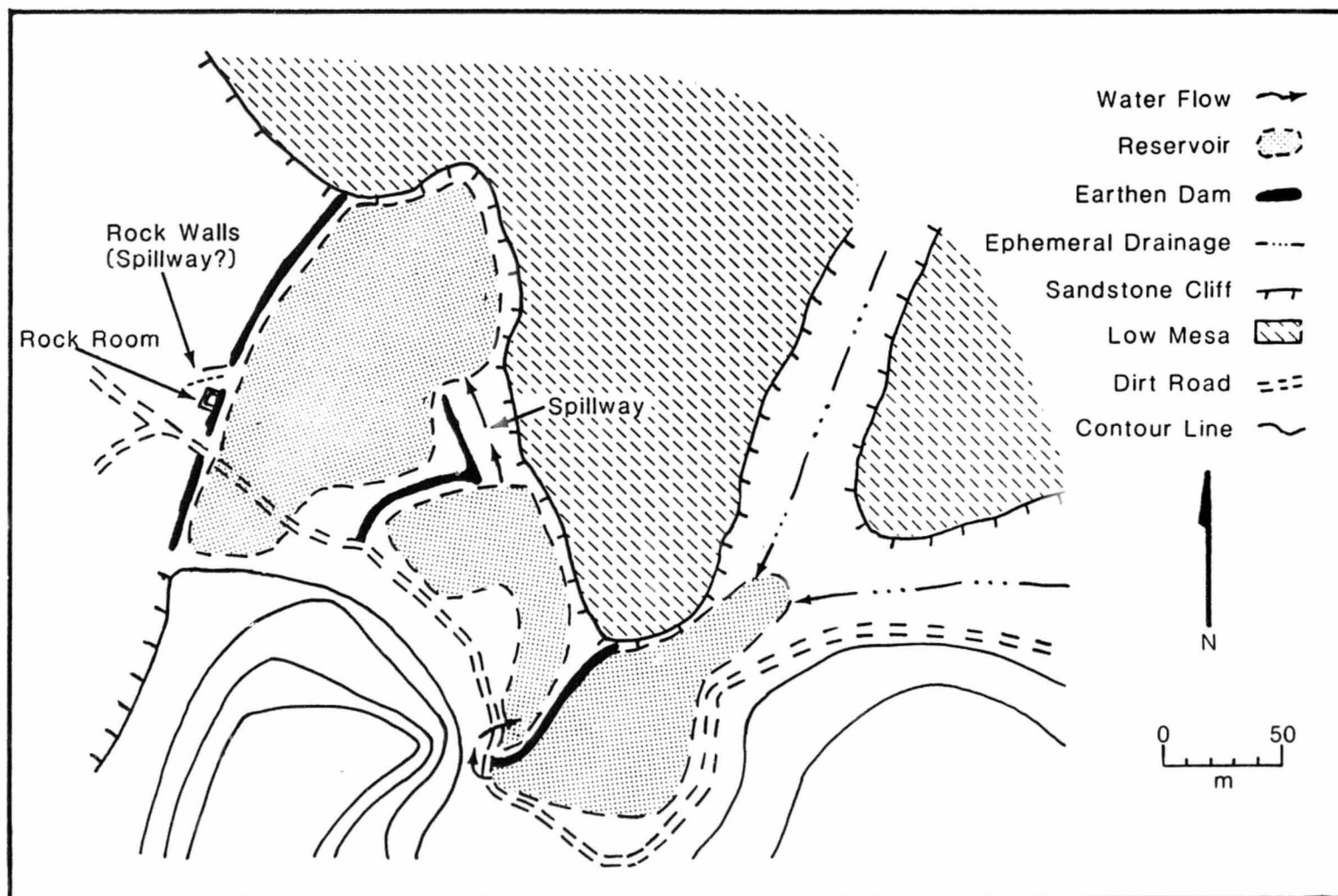


Figure 33. Plan map of site 42SA17120 showing dams, spillway and other features.



sandstone slab wall against a low sandstone outcrop. The room is 5 m long, varies between 2.5 and 3.0 m deep and has low walls currently measuring no more than 50 cm high. The function of this room is unknown. North of this structure are two parallel rock walls, one 13 m long and the other 25 m long. Their function is unknown, although they may have been part of a spillway feature associated with an adjacent dam.

The three earthen dams are built across the main drainage flowing into Devils Lane from Devils Pocket; they create three small reservoirs where cattle were apparently watered. The largest dam, which is the farthest downstream of the three, is located near the intersection of

the drainage and Devils Lane. It is 4-5 m high, 111 m long and is primarily constructed of earthen fill but also utilizes some rock and natural outcropping sandstone. Approximately 180 m upstream is a second smaller dam, constructed entirely of earthen fill. It is 3-4 m high, 3-4 m thick and 60 m long. There is a spillway on the north side of the dam allowing water to flow into the pool behind the first dam when water reaches a sufficient height; this spillway adjoins the north end of the dam. It is outlined by a sandstone cliff and an earth wall that measures 32 m long, 2-3 m wide and 1.0-1.5 m high. The third dam is 110 m upstream and measures about 76 m long, 3-4 m wide and 2-4 m high.

## Chapter 7

### RESULTS OF THE TESTING

by Betsy L. Tipps

#### Salt Pocket Shelter

##### Environmental Setting

Salt Pocket Shelter (site 42SA17092) lies in the Salt Creek Pocket survey parcel, east of Salt Creek, in an area characterized by broad, open valleys or pockets outlined by vertical cliffs on the east and Salt Creek on the west. The site is located at the northwest tip of a northwest-southeast-trending sandstone point which forms one of the pockets. Most of the cultural remains are adjacent to a shallow overhang formed by a large sandstone boulder. A sparse scatter of lithic debris found in a shallow overhang 40 m to the south is also included in this site. The terrain is open and gently rolling to the north, east and west, and composed of vertical cliffs to the southeast. Immediately south is a small pocket outlined by Cutler Formation sandstone cliffs.

The site has an aspect of 320° (northwest) and an average slope of 1°. The nearest source of water would have been a northwest-flowing ephemeral drainage which is presently eroding the eolian deposits comprising the west side of the site. A more dependable water supply would have been Salt Creek, located approximately 2 km west.

Lying at an elevation of 1530 m, the on-site vegetation is predominantly

As discussed in Chapter 1, the testing program outlined by the National Park Service for this multiyear project is limited to collecting absolute chronological information and subsistence data such as plant macrofossils from selected sites. As such, testing is primarily limited to sectioning discrete features such as hearths and roasting pits, though excavation of small areas within midden deposits is permitted when there is a potential for answering project research questions. Because of the noncollection policy of the project, no general surface collections accompany the testing, though artifacts exposed during the excavation are to be collected and analyzed.

Two of the sites recorded during the 1985 survey were selected for testing, site 42SA17141 in the Devils Lane Area and Salt Pocket Shelter (site 42SA17092) in the Salt Pocket Area. Site 42SA17141 had features and artifacts believed to be of Archaic age and was selected for testing because it provided an opportunity to date the poorly known Archaic occupation in the park. Salt Pocket Shelter had a Barrier Canyon Style pictograph and midden deposits with a potential to yield datable material. Testing at this site was undertaken with the hope of obtaining chronological information relevant to the Barrier Canyon rock art style.

snakeweed (*Gutierrezia* spp.), with lesser amounts of juniper (*Juniperus* sp.), single leaf ash (*Fraxinus anomala*) and prickly pear (*Opuntia* sp). Saltbush (*Atriplex canescens*) and Indian rice grass (*Oryzopsis hymenoides*) grow in the general site vicinity.

### Site Description

The site is characterized by two occupation areas. Area 1 is composed of a Barrier Canyon anthropomorph, a dense concentration of chipped stone debitage, 19 stone tools and 3 cores associated with a dark, ashy, stained midden. The artifact scatter and midden lie on and in a shallow eolian accumulation in front of the overhang formed by the boulder, whereas the pictograph is in the overhang itself. Area 1 extends approximately 60 m north-south by 20 m east-west and has a maximum density of 60 artifacts/m<sup>2</sup>. Area 2 is located approximately 40 m to the south, and consists of a 10- by 10-m scatter of debitage and a mottled white chert chopper in a small, west-facing alcove eroded into the sandstone cliff. Scattered artifacts extend between the site areas, so that the site covers an area measuring 115 m north-south by 50 m east-west.

The artifactual assemblage in Area 1 is composed of thousands of pieces of debitage, a probable Early Archaic Sand Dune Side-notched projectile point, six bifaces, three cores, a hammerstone, eight manos and three metates. Four of the manos are the single hand variety; the other four are broken and handedness could not be definitely determined, though all four appear to be single-hand as well. They are made from local sandstone (n=4) or tan, gray or white quartzite (n=4), and are generally well worn, indicating extended use. Five of the eight are bifacially ground. Corresponding well with the occurrence of single hand manos are two classic basin metates, both of which have well-worn oval grinding depressions measuring more than 1.5 cm deep. The other metate is a fragment and could not be ascribed to a particular type.

The groundstone is concentrated in an 18-m north-south by 9-m east-west area on the west side of Area 1 and seems to correspond with the location of the midden. The exact size, shape and extent of the latter could not be ascertained because it is covered with a veneer of eolian sand.

The pictograph consists of a single, triangular-bodied anthropomorph outlined in red pigment (Figure 34). The interior of the body is sectioned by 11 straight, vertical red lines; no head is visible and appendages are lacking. The bottom of the figure is located about 55 cm above the bedrock forming the floor of the overhang. The figure is 64 cm tall, 38 cm wide at the shoulders and has a northern exposure.

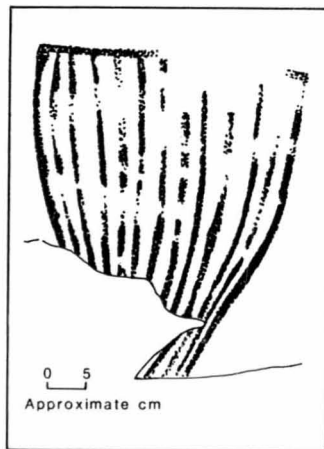


Figure 34. Barrier Canyon anthropomorph at Salt Pocket Shelter, site 42SA17092, in the Salt Creek Pocket Area.

### Methods

Testing at Salt Pocket Shelter was initiated by staking in a 1- by 1-m test unit, oriented on true north, over a dark stain in the midden. After photographing the test pit, plotting its location on the site survey map and collecting surface artifacts within the square, the test unit was excavated in arbitrary 10-cm levels to bedrock following the contour of the modern surface. All fill was screened through one-quarter-inch mesh, with artifacts being collected and bagged by major artifact class. The portion of a buried, unlined hearth which protruded into the edge of the test pit was excavated separately. Most of the feature fill was retained for flotation, with the remainder being screened to obtain the artifacts. A sample of charcoal was also collected for carbon-14 dating. After mapping and recording the feature, the feature and test pit were backfilled. The only other activity conducted during the testing was collection of the Sand Dune Side-notched projectile point identified during the survey.

### Results

#### Feature and Deposit Description

Excavation of the 1- by 1-m test pit resulted in the discovery of cultural deposits and an unlined hearth. The cultural unit is composed of dark red (2.5YR3/6d), silty sand containing large amounts of chipped stone, some groundstone and several pieces of oxidized sandstone. This unit ranges up to 26 cm thick and, in portions of the pit, is underlain by a dark red clayey sand containing fewer artifacts and no charcoal. The deposits terminate at solid bedrock a maximum of 32 cm below the modern surface.

An ashy stain in the southwest corner of the test pit proved to be the northeast one-quarter of an eroded, unlined hearth. This feature is excavated into the dark red, silty sand and contains flakes, ash and charcoal intermixed in dusky red (2.5YR3/2d), sandy silt fill. Although only

the quarter of the feature extending into the test pit was excavated, it appears to be circular in plan and approximately 70-75 cm in diameter. The feature is a maximum of 8 cm deep and somewhat basin shaped in profile.

A charcoal sample from the hearth yielded a radiocarbon date of 3340 ± 100 years:1390 B.C. (Beta-21209), i.e., 1490-1290 B.C. The tree-ring corrected range for this date is 1750-1500 B.C. at one sigma (cf. Stuiver and Becker 1986). This date falls at the early end of the Late Archaic time span designated for this project.

#### Artifacts

The assemblage of artifacts collected from the test pit consists of 1 biface, 1 uniface, 304 pieces of debitage and 2 pieces of groundstone. The projectile point from the site surface was also collected and is described in Chapter 6. This sample is not considered representative of the site as a whole, but does provide some insights about artifact types present at the site.

The biface is made from local Cedar Mesa Chert, and is fractured at an angle across the midsection so that only the tip and a portion of the midsection remain. It is technologically a preform in that it is thinned, relatively symmetrical and moderately well made. Pressure flaking is evident on one face and both the lateral margins and tip exhibit edge rounding suggesting that the implement was used as a cutting tool. The shape of the original complete biface is uncertain though it appears to have been rather wide in relation to its length.

The uniface is also made from local red Cedar Mesa Chert. It has a slightly asymmetrical but lenticular outline and a plano-convex cross-section. The dorsal surface has been pressure flaked into a "convenient-to-hold" shape, and one end has a wide, deliberately flaked projection that exhibits unifacial microscarring. Both the biface and the uniface are from the upper 10-cm level within the test pit.

The groundstone assemblage from the test pit is composed of a small fragment of a bifacially ground, one-hand mano made from coarse grained, yellowish sandstone, and a bifacially ground piece of tabular sandstone measuring 4.0 by 3.8 cm across and 1.7 cm thick. This small fragment was probably part of a metate, although the type cannot be determined. Both of these artifacts are from the artifact-rich, upper 10-cm unit in the test pit.

A total of 304 pieces of debitage was recovered from the test pit: 36 pieces from the surface, 3 from the unlined hearth and 265 from the general test pit fill. Two hundred of the pieces from the test pit fill are from the upper 10-cm level, whereas the remaining 65 were collected between 10 cm and bedrock, clearly indicating that the bulk of the cultural materials lie in the upper portion of the deposit.

Three main material types are present in the assemblage, local Cedar Mesa Chert, Summerville Chalcedony and algalitic chert. Gray chert, quartzite and several pieces of yellow, purple, pink and green chert were also observed; because of their low frequencies and because most of them are also uncommon in the project area, little can be said about their presence. As expected, local Cedar Mesa chert is the most common material accounting for 92.1% ( $n=280$ ). The next most common types are algalitic chert (2.6%,  $n=8$ ) and Summerville Chalcedony (1.3%,  $n=4$ ). All of the other materials are represented by three pieces or less. These finds parallel trends observed in the debitage assemblages of sites in the Salt Creek Pocket Area (see Chapter 6), with the minor exception that brown chert was expected but not found.

The local availability of Cedar Mesa chert as well as its preponderance in the collection can logically be interpreted as indicating an emphasis on local resources. Assuming that unusable cortex and mass are discarded at or near the procurement site, and that materials which have to be transported over a long distance are conserved, this inference is corroborated by

the high percentage of debitage with cortex (24.6%) and the relatively large percentage shatter and chunks (34.6%). The moderately high percentages of large (15%) and medium flakes (30%)—flakes exceeding 32 mm along the maximum dimension and flakes measuring greater than 19 mm but less than 32 mm in their longest dimension, respectively—also indicates a nearby source for the same reasons.

All of the other materials except algalitic chert are characterized by a complete lack of chunks, shatter, cortex and large flakes, indicating that they were obtained from more distant sources. Algalitic chert is represented by seven flakes and one piece of shatter; two of the eight pieces exhibit cortex. These data may indicate a somewhat closer source, but this possibility needs to be evaluated with a larger and statistically representative sample.

Most of the identifiable debitage was produced using a biface manufacturing technology that included direct freehand percussion and pressure flaking. All stages of bifacial reduction appear to have taken place on the site, although thinning and final shaping appear to have been emphasized; this is not surprising given the frequency of bifaces present in the surface assemblage. A limited number of flakes also indicate the presence of a core-flake reduction strategy wherein flakes were the desired product; both primary and secondary core-reduction flakes are present. Evidence for heat treatment is entirely lacking.

## Site 42SA17141

### Environmental Setting

Site 42SA17141 is located on the elevated bench forming the south end of Butler Flat overlooking Chesler Canyon Wash to the north. This bench slopes gently down to the northeast at an angle of approximately 5°. The northern boundary of the site is formed by a line of three sandstone hoodoos, whereas the south and

west site boundaries are marked by a deeply incised, dry wash that flows west and then northwest into Chesler Canyon Wash. Terrain to the east consists of an open, sand-covered bench that drops off some 20-40 m east of the site. The depositional context is primarily tan eolian sand overlying a white sandstone outcrop.

The nearest source of water would have been the dry wash marking the southern boundary of the site, but this drainage would have probably held water on a very infrequent basis. The closest other water source is Chesler Canyon Wash, which is also dry most of the year.

Lying at an elevation of 1609 m, the primary plant taxon is blackbrush (*Cologyne ramosissima*). Other taxa include pinyon (*Pinus edulis*), juniper (*Juniperus* sp.), mountain mahogany (*Cercocarpus montanus*), snakeweed (*Gutierrezia sarothrae*), yucca (*Yucca* sp.), paintbrush (*Castilleja* sp.) and various grasses.

### Site Description

Site 42SA17141 is a medium-sized, high density, lithic scatter with features and one sherd located between an east-west-trending line of three sandstone hoodoos and a deeply incised dry wash. It has three discernible concentrations of debitage and tools, one of which exhibits as many as 200 lithic artifacts/m<sup>2</sup>. The assemblage of surface artifacts is composed of an indeterminate white ware jar sherd, an Elko Side-notched dart point, a Style A Anasazi point, 9 bifaces, a core, a hammerstone, 7 manos, 5 metates and an estimated 10,000 pieces of debitage. Features include three hearths, two of which—Features 2 and 3—are definitely slab lined. The other hearth, Feature 1, is evidenced by a circular stain of charcoal, several pieces of burned sandstone and one partially upright slab that may be a metate.

Area 1, the largest and most dense artifact scatter, measures approximately 120 m north-south by 32 m east-west. It is exposed in and around an abandoned road bed near the eastern edge of the site and

clearly contains depth. Within the boundaries of this area are the sherd, most of the debitage and all of the stone tools except the core and four bifaces. Features 1 and 2 lie at the south and north ends of Area 1, respectively. Feature 3 lies about 20 m west.

Area 2 extends southeast from the westernmost hoodoo and measures 40 m northwest-southeast by 8 m northeast-southwest. It contains an estimated 50-75 flakes and has a maximum density of 8 flakes/m<sup>2</sup>. Tools are limited to a single biface. Area 3, a long narrow concentration measuring 48 m northeast-southwest by 16 m northwest-southeast, abuts the south side of the two western hoodoos. It has a core, 2 bifaces, up to 500 flakes and a maximum artifact density of 30/m<sup>2</sup>. Scattered artifacts are found between the concentrations, linking them into a site measuring 180 m northwest-southeast by 130 m northeast-southwest.

The slab-lined hearths and majority of artifacts suggest a predominantly Archaic occupation, with the single sherd and Anasazi point indicating only minor Pueblo II-III usage. All seven manos are the one-hand variety and the typeable metates are all the basin style; the debitage is primarily from a refined bifacial reduction technology which is generally attributed to Archaic populations.

### Methods

Testing at site 42SA17141 consisted of photographing, mapping and sectioning a slab-lined hearth, Feature 2. Two charcoal samples and three flotation samples were collected. The remaining fill was screened through one-quarter-inch hardware cloth to obtain all artifacts. The half-excavated feature was drawn and photographed and, at the request of the National Park Service, refilled with sterile sand. Two projectile points and a bi-pointed bifacial knife were collected from the site surface as part of the testing procedure.

## Results

### Feature Description

Feature 2 is exposed on a north-facing slope in the bed of an old road. It is composed of a circular, ashy stain outlined by six upright sandstone slabs as well as a variety of other sandstone slabs and rocks lying horizontally on the ground surface (Figure 35). The upright slabs range from 12 to 32 cm long and are about 3 cm thick; most are burned.

The feature has an unprepared, but oxidized floor that is basin shaped in profile. It is about 90 cm in diameter and a maximum of 25 cm deep. Feature fill is black, organic-rich sand containing numerous charcoal flecks and charcoal chunks measuring up to 20 cm across. Several burned sandstone slabs that do not appear to have been framing stones lie horizontally within the hearth.

A charcoal sample from this feature yielded a radiocarbon date of  $2080 \pm 60$  years:130 B.C. (Beta-21208), i.e., 190-70 B.C. The tree-ring corrected ranges for this date are 199-188 B.C., 174-88 B.C., 82-68 B.C., 61-41 B.C. and 9-2 B.C. at one sigma (cf. Stuiver and Becker 1986), all of which are within the Late Archaic period as defined for this project.

### Artifacts

Six artifacts were collected during the testing activities, an Elko Side-notched point, a Style A point and a bi-pointed biface from the general site surface, and two flakes and a hammerstone from the surface in the immediate vicinity of the feature. No artifacts were recovered from the hearth itself.

The points and biface are described in Chapter 6 and illustrated below in Figure 36. The hammerstone is made from a chunk of yellow and brown algalitic chert and exhibits battering on both ends. Its morphology resembles that of a snub-nosed scraper, but the crushed and battered edges indicate it was used as a

hammerstone. This tool is 6.6 cm long, 4.4 cm wide and a rather uniform 2.4 cm thick. Both of the flakes are thin, less than 3 cm long, lack cortex and have a morphology indicating secondary reduction. One is made from brown algalitic chert and was produced using a bifacial reduction technology. The other is made from a mottled red-yellow chert and was probably made using a core-flake reduction strategy.

### Plant Macrofossils

by Nancy J. Coulam

Five bulk flotation samples were analyzed from two sites within Canyonlands National Park: Salt Pocket Shelter and site 42SA17141. Two of the samples are from the unlined hearth at Salt Pocket Shelter; the other three samples are from a slab-lined hearth at site 42SA17141.

Table 16 lists the identifiable charred plant remains by site, feature and sample. The number of different plant taxa recovered from the samples ranges from 1 to 9 with a total of 15 different plant taxa identified in the 5 flotation samples. Nine plant taxa were identified in each of the sites, with only three plant taxa common to both sites. The three plants present in both sites are *Atriplex* spp., *Chenopodium* spp. and CRUCIFERAE. *Atriplex* spp. is the only one of these common plants present in all five flotation samples. Both *Chenopodium* spp. and *Atriplex* spp. are members of the CHENOPODIACEAE or Goosefoot Family.

The genus *Atriplex* includes both herbs and shrubs occupying numerous habitats throughout Utah (Welsh et al. 1987:117). Since burned seeds of *Atriplex* spp. were recovered, it is likely that this taxon was utilized prehistorically as an edible resource; of course, given its ubiquity in the samples, it is also possible that *Atriplex* spp. was growing on or near both sites and its seeds were burned and preserved as part of the natural seed composition of the sites.

*Chenopodium* spp. is an annual herb, widely distributed in disturbed habitats

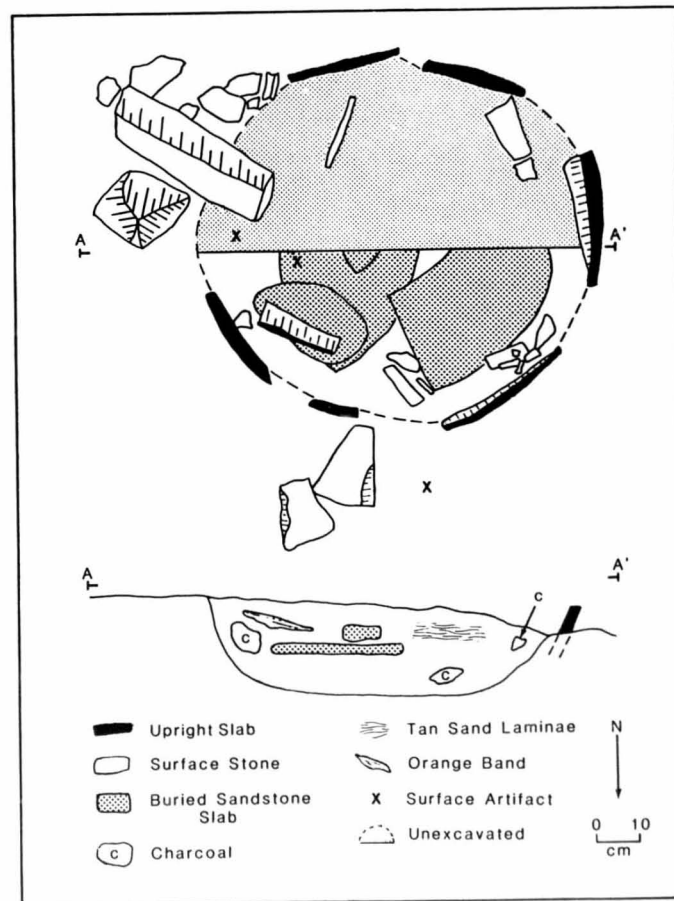


Figure 35. Plan map and profile of a slab-lined hearth at site 42SA17141 in the Devils Lane Area.

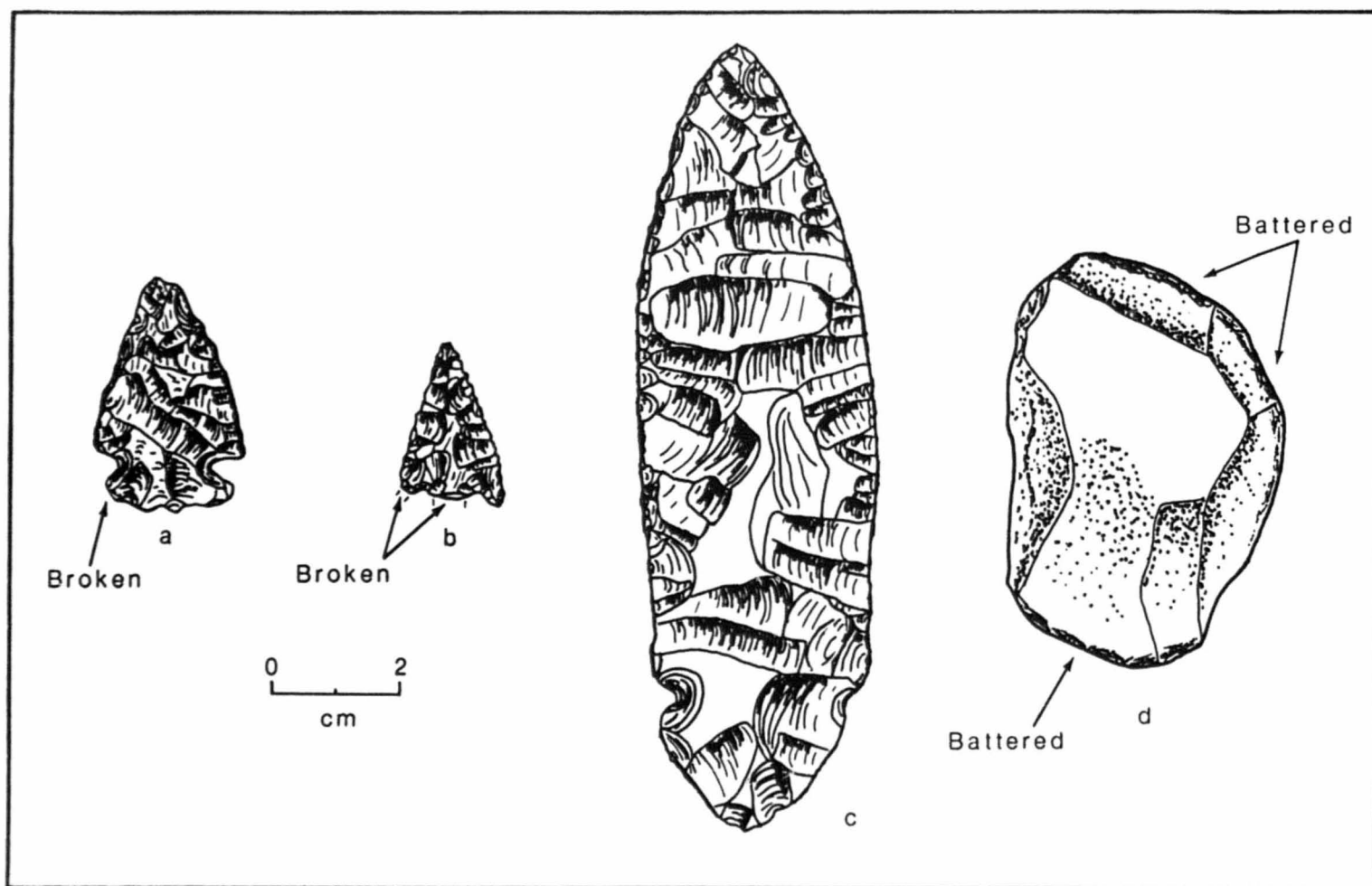


Figure 36. Selected tools from site 42SA17141 in the Devils Lane Area. a, Elko Side-notched projectile point; b, Style A projectile point; c, bi-pointed biface; d, hammerstone.

Table 16. Plants present in bulk flotation samples from Salt Pocket Shelter and site 42SA17141.

Scientific Name	Common Name	42SA17092 Unlined Hearth		42SA17141 Slab-lined Hearth		
		Sample 1	Sample 2	Sample 1	Sample 2	Sample 3
<i>Atriplex</i> spp.	Saltbush, shadscale	x	x	x	x	x
CACTACEAE	Cactus family	x				
<i>Chenopodium</i> spp.	Goosefoot pigweed	x		x	x	x
<i>Comandra umbellata</i>	Bastard toadflax					
CRUCIFERAE	Mustard family	x		x		x
<i>Descurainia pinnata</i>	Pinnate tansymustard					x
<i>Distichlis</i> spp.	Desert saltgrass		x			
<i>Ephedra</i> spp.	Ephedra, Mormon tea					x
GRAMINEAE	Grass family	x				
<i>Helianthus</i> spp.	Sunflower	x				
<i>Juniperus osteosperma</i>	Utah juniper			x	x	x
<i>Lepidium</i> spp.	Peppergrass			x		
<i>Pinus edulis</i>	Pinyon			x		
<i>Sporobolus cryptandrus</i>	Sand dropseed		x			
<i>Stipa hymenoides</i>	Indian rice grass		x			

(Welsh et al. 1987:123-126). Ethnographically, both *Chenopodium* spp. and *Atriplex* spp. were utilized for their seeds. According to Chamberlin (1911), species of *Chenopodium* and *Atriplex* provided a food supply "limited only by the capacity of the Indians to harvest it." The presence of burned seeds of both these members of the CHENOPODIACEAE may indicate that these summer seed crops were important prehistoric edible resources.

Burned seeds identified only to the CRUCIFERAE family were also found in both sites. Additional members of this plant family identified in the slab-lined hearth from site 42SA17141 are *Lepidium* spp. and *Descurainia pinnata*. *Descurainia pinnata* is an annual or winter annual (Welsh et al. 1987:260) which occurs throughout Utah; depending on the species, *Lepidium* is an annual, biennial or perennial (Welsh et al. 1987:270). According to Chamberlin (1911; cf. Steward 1938) the seeds of both CRUCIFERAE were eaten by the Gosiute and western Shoshoni.

Other plant taxa present in the samples were probably accidentally charred during food preparation or consumption. In the hearth at Salt Pocket Shelter, these probable edible resources include several

GRAMINEAE, *Sporobolus cryptandrus*, *Stipa hymenoides* and a tentatively identified *Distichlis* spp. In addition to these grasses, the burned spine of a CACTACEAE and burned seed of *Helianthus* spp. were also probably edible resources preserved as a result of cooking or food processing around the hearth at Salt Pocket Shelter.

In addition to the *Atriplex*, *Chenopodium* and CRUCIFERAE, *Juniperus osteosperma* branchlets and cones were recovered from the slab-lined hearth at site 42SA17141, along with fragments of *Pinus edulis* needles and seeds. Both of these woody plants were undoubtedly brought to the site as firewood; *Pinus edulis* would also have been utilized for its edible seeds. It is notable that both of these woody plants or trees were recovered from site 42SA17141 but not from Salt Pocket Shelter.

While other plants were recovered from the two sites, they are questionable as prehistoric resources. Only additional analysis of flotation samples from these and other sites will confirm their presence as resources and not as simple seed rain or natural inclusions in the sites.

## RESULTS OF THE TESTING

Some limited comparisons are possible with previously excavated sites on the Colorado Plateau. For example, discounting the 3 flotation samples from site 42SA17141 reported here, 18 flotation samples have been analyzed from slab-lined hearths or cists on the Colorado Plateau. These slab-lined features range in radiocarbon age from 1220  $\pm$  70 B.P. at Cedar Siding Shelter to 4670  $\pm$  140 B.P. at Sudden Shelter. The mean number of plant taxa recovered from these features is 4.56, the median is 4.0, the range is 1 to 11 with all samples with plant diversity greater than 7 dating prior to 3000 B.P. The 3 samples analyzed from site 42SA17141 contain 4, 5 and 7 plant taxa, so the number of plant taxa recovered from the Canyonlands site fits with the numbers recovered from similar features with similar dates on the Colorado Plateau.

Hearths similar to the one at Salt Pocket Shelter have been analyzed by flotation, but only one flotation-sampled hearth on the northern Colorado Plateau has a similar date; Hearth F16 from Stratum 21 at Sudden Shelter dates from ca. 3440-3380 B.P. It was analyzed with four flotation samples. The diversity of plants recovered from these samples is relatively high: 8, 7, 7 and 5 plant taxa were identified. The high number (9) of taxa recovered from Salt Pocket Shelter, Sample 1, fits well with the samples from the Sudden Shelter hearth.

## Conclusions

Although only a few conclusions can be derived from the limited testing at Salt Pocket Shelter and site 42SA17141, these conclusions are important and greatly contribute to our understanding of Canyonlands prehistory. First, the testing unequivocally demonstrates Archaic occupation in the Needles District of the park, and dates it to at least two different time periods within the Late Archaic. Second, the testing provided a radiocarbon date which may be associated with the Barrier

Canyon rock art style. If associated, the Salt Pocket Shelter radiocarbon date pushes the estimated date of the Barrier Canyon Style back by more than 1000 years, which would make it some of Utah's oldest rock art. Although it cannot be certain that the people who used the hearth at Salt Pocket Shelter also painted the Barrier Canyon figure, the testing initiates a data base which, once enough cases have been documented, will provide the basis for accepting or refuting the association and dating the Barrier Canyon rock art style.

## Salt Pocket Shelter

Testing at Salt Pocket Shelter demonstrated that the site has intact subsurface deposits that contain datable materials and artifacts of at least Archaic age. The site has the potential to provide a great deal of information on the composition of Late Archaic assemblages, as well as Late Archaic features. The potential for subsistence information is more limited due to the open nature of the site, but given the lack of such data on Archaic sites in the area, this potential is also important.

The limited artifact collections indicate a dependence on locally available stone for manufacturing chipped stone and groundstone tools. Chipped stone tools were primarily manufactured using a bifacial reduction strategy that included pressure flaking and direct freehand percussion, with on-site reduction activities emphasizing thinning and final shaping. The assemblage of surface and subsurface groundstone, consisting primarily of one-hand manos and basin metates, indicates a technology geared towards processing wild plant resources. The flotation analysis confirms the use of wild plant resources and indicates that they were probably obtained in the general site vicinity.

The radiocarbon date clearly indicates that the site was occupied during the Late Archaic, sometime between 1750 and 1500 B.C., whereas the stylistically early Sand Dune Side-notched point indicates the possibility of an earlier occupation. Based on

#### RESULTS OF THE TESTING

the limited testing, it cannot be certain whether the site was occupied during more than one time period, nor whether the midden deposit, hearth, artifacts and date are associated with the Barrier Canyon pictograph. The association is certainly suggestive but will be stronger if excavations at other sites with this distinctive rock art style yield similar dates.

##### Site 42SA17141

The limited testing at this site provides unequivocal evidence that the Butler Flat area was occupied during the Late Archaic, sometime during the last two centuries before Christ. It also strengthens the

association between slab-lined hearths and Late Archaic peoples, and indicates that important subsistence data are contained by such open features. The work also indicates a strong relationship between "Archaic style" groundstone technology (one-hand manos and basin metates) and the Archaic period in the Canyonlands area; while this association has long been recognized, its utility for dating sites has been questioned because the same technology may also occur on Anasazi sites. Documenting this association on sites of known age is one means of evaluating the utility of this dating method in Canyonlands.

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## CHAPTER 8

### DISCUSSION

by Nancy J. Hewitt, Betsy L. Tipps and William A. Lucius

The inventory of 4500 acres and the documentation of 142 sites in two areas of the Needles District have provided some preliminary data for addressing the questions outlined in the research design. The research issues and questions are addressed below in the order they were presented in Chapter 3.

#### Domain 1: Cultural Affiliation and Chronology

The nature of a surface survey makes dating the recorded sites and assigning them a cultural affiliation a tentative proposition, and it must be realized that subsequent excavation could change interpretations based solely on surface evidence. Because of a lack of diagnostic materials, only 39% of the recorded sites and components could be assigned a cultural affiliation and/or temporal period; the remainder had to be simply characterized as aboriginal and prehistoric. Despite the small number of sites assignable to a cultural group and temporal period, some preliminary statements can be made.

#### Research Issue 1

##### Paleoindian Period

Despite a concerted effort to identify materials diagnostic of the Paleoindian period, no evidence for the presence of big game hunters was recorded. An effort to locate such remains will be made in future years.

##### Archaic Period

Fifteen sites and components contain materials or features that are believed to be diagnostic of Archaic peoples. These assignments were based on the presence of Archaic style projectile points, Barrier Canyon and Glen Canyon Linear rock art and/or Archaic style, slab-lined hearths in the absence of pottery, architectural features and other Anasazi traits.

Dating of the Archaic sites is extremely difficult as most of the materials recorded on the Archaic sites are not particularly amenable to temporal placement. One site contained a Sudden Side notched point which tentatively places it in the Middle Archaic, and another had a Sand Dune Side-notched point, which dates it to the Early Archaic. Two other sites and components were dated to the Late Archaic through carbon-14 dating hearth features. The Needles District therefore appears to

### DISCUSSION

have been occupied during all three phases of the Archaic period. At present, the remaining 11 sites and components can only be dated to the general Archaic period, 7000 B.C.-A.D. 500. Analysis of radiocarbon samples from hearths on these sites could provide more dates, and the acquisition of such samples is recommended.

With so few sites assignable to a temporal span within the Archaic, it is too early to ascertain whether the Archaic occupation follows the chronological sequence developed by Schroedl (1976) for the northern Colorado Plateau. However, the presence of both a Sudden Side-notched point and a Sand Dune Side-notched point indicates some affinity with Archaic occupation on the northern Colorado Plateau.

The survey sheds no additional light on the issue of Basketmaker II occupation in Canyonlands as no sites were unequivocally attributable to these early Basketmaker peoples. Some of the sites attributed to Archaic populations could actually represent Basketmaker II occupation, but further consideration of this issue would require excavation and radiocarbon dating.

##### Late Prehistoric Period

Previous investigations in Canyonlands indicated that remains of two Late Prehistoric cultures might be found in the two survey areas: the Anasazi and the Fremont. Fremont sites were expected to be rare and, if present at all, might be limited to rock art sites. This expectation was realized; only 1 possible Fremont site, which consists solely of rock art, was recorded, whereas 38 sites and components of Anasazi affiliation were identified.

##### Anasazi

Pottery from the Anasazi sites allows for a fairly tight temporal placement and indicates that the first use of the area by Anasazi groups could have occurred during Basketmaker III-Pueblo I (approximately A.D. 575-900). One site in the Devils Lane Area has Chapin Gray pottery and Style B projectile points, suggesting Basketmaker III-Pueblo I utilization, and another nearby

site has 14 sherds from a Pueblo I grayware vessel. A third site in the Devils Lane Area has Chapin Gray and Dolores Corrugated pottery as well as Style B projectile points, suggesting a Pueblo I-II date. Consistent with patterns observed elsewhere in the park, the majority of the sherds indicate that the primary Anasazi occupation in both the Devils Lane and Salt Creek Pocket areas was during the late Pueblo II-Pueblo III period (approximately A.D. 1000-1250).

The projectile points add little new information. Style C, Bull Creek and Parowan Basal-notched points all date within the Pueblo II-III time span. Style B points, which are the most common Late Prehistoric type found on the survey, generally date to Pueblo I-II. This does not mean that there was a heavy Pueblo I-II occupation, however, because Style B points can also date to Pueblo III and five of the eight specimens occur on the sites that were already dated to the early portion of the Anasazi time span based on the pottery.

A tree-ring date of 969fp-1131vv was obtained from a wooden post in one of the Anasazi sites in the Devils Lane graben (site 42SA17118). Although the distance to the outer ring and the cutting date are unknown, the date does appear to be generally consistent with the main Anasazi occupation.

Based on the available data, it is not possible to ascertain whether the dates of the various periods are the same as those in the Pecos sequence. Further investigations, including excavation, are required.

Temper and paste types as well as stylistic designs in the ceramic assemblage indicate Mesa Verde affiliation for all Anasazi sites. One Parowan Basal-notched point was observed. Although such points generally occur in Parowan Fremont and Virgin Anasazi sites, they have been found in Mesa Verde Anasazi sites in southeastern Utah and the presence of this one point is not enough to warrant a Fremont or Virgin Anasazi ascription. The same

applies for the Bull Creek point. Also, the Kayenta Anasazi-appearing architecture is probably the result of intended site function as short-term habitations and camps rather than an indication of Kayenta presence.

Due to the small number and ephemeral nature of the Anasazi sites recorded during this season of survey, it is difficult to assess whether the late Pueblo II-Pueblo III occupation is the result of in situ growth, immigration or both, though immigration appears most likely due to the paucity of Basketmaker III, Pueblo I and early Pueblo II sites. There are some striking similarities between the temper and paste characteristics of some of the pottery in Beef Basin and the survey parcels, but whether these indicate trade, use of the area by residents of Beef Basin or that populations from both areas had access to the same resources cannot be assessed using the existing data. Further research on this topic is required.

#### Fremont

Only one component was classified as Fremont. This designation was based on the presence of two Southern San Rafael Fremont Style anthropomorphs. If these figures were made by Fremont people and not simply Fremont motifs executed by Anasazi or other artists, this component can be placed in the broad time span of A.D. 700 to 1200 defined for the San Rafael Fremont Style. The lack of other Fremont sites verifies previous researchers' belief that Fremont use of the park was sparse and sporadic (cf. Lucius 1976; Sharrock 1966).

#### Protohistoric Period

No evidence of Ute, Paiute or Navajo groups was recorded in either survey area.

### Research Issue 2

The second research issue in the cultural affiliation and chronology domain concerns prehistoric rock art in Canyonlands and its usefulness in assigning

cultural affiliation and temporal placement. Three distinctive styles were identified in the survey parcels: Barrier Canyon Anthropomorphic Style, Glen Canyon Linear Style and Southern San Rafael Fremont Style.

#### Barrier Canyon Anthropomorphic Style

The Barrier Canyon Anthropomorphic Style, believed to be the oldest style of the three styles found during the survey, was originally tentatively dated between 500 B.C. and A.D. 500 (Schaafsma 1980:70). As noted in Chapter 3, Schroedl (1977, 1989) and Noxon and Marcus (1985) feel that the style may have a greater antiquity because of the similarity between the Barrier Canyon Style rock art figures and an unfired clay figurine from the Early Archaic assemblage at Cowboy Cave.

The midden and a hearth at Salt Pocket Shelter, an Archaic habitation site with a Barrier Canyon figure, were tested in an attempt to date the Barrier Style rock art. The hearth yielded a radiocarbon date of  $3340 \pm 110$  B.P. which has a tree-ring corrected range of 1750 to 1500 B.C. at one sigma. Although the association appears good and the date is certainly suggestive, the evidence for multiple Archaic occupation at this site suggests that additional dates should be obtained from other sites before this date is unquestioningly applied to the Barrier Canyon Anthropomorphic Style.

Further work at Salt Pocket Shelter and site 42SA17090, which also contains Barrier Canyon rock art and midden deposits, might be very useful for obtaining additional dating information. Limited testing might also yield diagnostic artifacts which could be used to address the research questions pertaining to the cultural affiliation of the Barrier Canyon artists.

Due to the uncertainty surrounding the age of the Barrier Canyon Style figures, all sites exhibiting the distinctive anthropomorphs were assigned to the generalized Archaic period, 7000 B.C. to A.D. 500.

#### Glen Canyon Linear Style

The survey demonstrated that the Glen Canyon Linear Style is present in the Needles District of the park and occasionally co-occurs with the Barrier Canyon Style. The small size of the sample precludes an assessment and explanation of this association, although future research may allow further consideration of this issue. None of the sites with Glen Canyon Linear Style rock art contained artifacts diagnostic of the Archaic period.

#### Other Early Rock Art Styles

Three Archaic rock art styles not found in the survey areas are the Great Basin Abstract Style, the Great Basin Representational Style and the Chihuahuan Polychrome Abstract Style. Noxon and Marcus (1985) believe that these styles are present in other areas of the park, but they are known by only a few tenuous examples.

#### San Juan Anthropomorphic Style

The lack of the San Juan Anthropomorphic Style rock art is significant when viewed in concert with the apparent lack of other Basketmaker II remains. The difficulty of identifying Basketmaker II sites was discussed in Chapter 3 and it is possible that such sites exist but are buried or have been misclassified. For example, some of the aceramic field camps that we identified as Archaic may prove to be Basketmaker II. But the lack of Basketmaker II rock art is in accord with the lack of other evidence of a Basketmaker II presence.

#### Faces Motif Anthropomorph Style

Faces Motif rock art was expected to be present in the survey areas but was not found. Noxon and Marcus propose that Faces Motif anthropomorphs are the handiwork of Anasazi artists because the artwork always occurs on Anasazi structural sites (Noxon and Marcus 1985). Most of the known Faces Motif panels occur in the Salt Creek Archeological District, an area that

apparently experienced a more intensive Anasazi occupation than other parts of Canyonlands National Park. Because the two areas surveyed in 1985 show limited use by Anasazi groups and contain no large habitations, the lack of Faces Motifs is not surprising and lends merit to Noxon and Marcus's thesis. However, more research should be done before this style is assigned unequivocally to the Anasazi.

#### Canyonlands Anasazi Style

The Canyonlands Anasazi Style posed by Noxon and Marcus (1985) is not as clear cut as they lead one to believe. For example, the survey found sticklike anthropomorphs displaying scenes from daily life—an element of the so-called Canyonlands Anasazi Style—with Glen Canyon Linear Style anthropomorphs. These figures were as heavily patinated as the Glen Canyon figures. Handprints, another Canyonlands Anasazi Style diagnostic, occur well outside the Canyonlands area (Barnes 1982). We are therefore hesitant to verify the presence of a Canyonlands Anasazi Style, and feel that the motifs assigned to this "style" should be studied further. It may be that the various motifs assigned to the style actually represent several styles. For example, two Archaic rock art styles occur in Canyonlands but it would not be appropriate to group them into a category called Canyonlands Archaic Style because each has distinctive motifs and designs.

#### Southern San Rafael Fremont Style

The occurrence of two Southern San Rafael Fremont anthropomorphs on a site in the Devils Lane graben demonstrates that this style occurs in the Needles District. No other evidence of Fremont occupation was found at this site, but several Barrier Canyon Style anthropomorphs and Anasazi handprints were recorded near the Fremont motifs. Noxon and Marcus (1985) and Sharrock (1966) have suggested that the Fremont-style rock art in the park is the result of direct borrowing of the style

by Anasazi groups. While Anasazi handprints are found at the same site, it is impossible to determine whether Fremont or Anasazi people are responsible for the art work or when it was created.

### Other Issues

The distribution of certain rock art styles within the park is another intriguing aspect of this research issue. The Barrier Canyon Style seems to occur throughout the Maze and Needles districts and corresponds with the considerable number of Archaic field camps and habitation sites found in these areas. The distribution of the Glen Canyon Linear Style has yet to be determined as it has only recently been recognized in the Needles District. Subsequent surveys should help define its distribution. However, the occurrence of both styles of rock art and Archaic sites in both the Salt Creek Pocket and Devils Lane areas indicate a fairly consistent, if not intensive, Archaic presence. The general location of these sites in dry, unwatered upland areas corresponds with survey findings in the Maze District where all but one of the Archaic sites were found in the upland areas away from the rivers (Lucius 1976).

Several rock art panels display styles that are indicative of more than one time period and cultural group. For example, site 42SA17106 in Devils Lane has Glen Canyon Linear Style figures beside later Anasazi figures, and site 42SA1450 has Fremont anthropomorphs next to Barrier Canyon anthropomorphs and Anasazi handprints. In Chapter 6, it was noted that many of the rock art panels occur in areas that may have been primary travel routes. Such routes are important since movement through much of the Needles District is encumbered by the dissected, rugged terrain. An access route that was good for one group probably served other groups as well. This may be one reason several panels show repeated use through time, especially in the Devils Lane graben which provides an excellent north-to-south passageway.

## Domain 2: Settlement Patterns

### Research Issue 3

#### Archaic and Basketmaker II Settlement Patterns

Although no Basketmaker II sites were recorded during the 1985 survey, the 15 Archaic sites and components allow some preliminary statements about Archaic settlement patterns in the Needle District. Archaic sites are widely distributed through the survey area, but at this point, there are too few Archaic sites known to determine if they are clustered in environmentally favorable areas (see maps in Appendix E).

Archaic site types found in the survey areas are very similar to those in the Maze District (Hogan et al. 1975; Lucius 1973) and primarily consist of small, transitory field camps and isolated rock art panels with a few residential bases or habitation sites. Thus, it appears that both areas were exploited in similar ways by small groups of mobile hunters and gatherers—perhaps even the same groups—who lived in small camps during much of the year with seasonal residence at habitation sites both in and outside of the survey parcels. The presence of limited activity sites, field camps and residential bases suggests that the Needles District was occupied during most of the year and not just during a single season by people seeking a specific resource. Indeed, the artifacts and features present on the various Archaic sites and components reflect a wide range of activities including communication, secondary lithic reduction, tool manufacture and maintenance, plant procurement and processing, and various domestic chores.

Many of the field camps are located at a considerable distance from permanent water, especially those in the Devils Lane Area. If the camps were established to coincide with the ripening of certain grasses in the spring and early summer, water may have been available in the numerous

potholes found in the sandstone bedrock. These potholes are known to hold water from storms in the spring and early summer (Jennings 1980). Therefore, it is assumed that many of the field camps were occupied during this time of year. Hunting forays or lithic procurement expeditions by Archaic groups could have occurred at any time of the year or coincided with and been incidental to the plant-gathering activities. The habitation sites may have been inhabited during any season, though winters in Canyonlands can be cold and snowy and the lack of substantial natural shelter at any of the habitation sites argues for spring, summer or fall use.

#### Anasazi Settlement Patterns

Anasazi sites in both survey areas are primarily field camps with some limited activity sites and some small habitations. The large habitation sites seen in the upper reaches of Salt Creek (cf. Sharrock 1966) and south of the park in Beef Basin (Rudy 1955) do not occur in the Salt Creek Pocket and Devils Lane areas. In fact, the habitations in these areas are so small that they might actually be camps. None of these sites appear to have kivas associated with them; all consist of only one to three rooms and all lack tools associated with corn grinding (i.e., two-hand manos and trough metates). None of the sites are located in areas that appear to be particularly amenable to agriculture, although two highly eroded possible granaries found on a site at the east end of Salt Creek Pocket as well as two trough metates and two two-hand manos found in this same survey parcel indicate some corn horticulture was practiced in the general area. While excavation might reveal the presence of features and artifacts reflecting more substantial occupation, current evidence suggests that most of the Anasazi sites were inhabited on a short-term, possibly seasonal basis for the purpose of procuring local resources such as plants, animals and lithic materials.

The evidence for Anasazi occupation in the two survey parcels is so sparse that an evaluation of residence patterns is not possible at this time, but several trends are evident. Anasazi sites are found throughout both survey areas but are not evenly distributed. In the Devils Lane Area, they are mainly found in and along Chesler Canyon Wash where their locations are believed to correlate with the occurrence of natural shelters, and towards the north end of the Devils Lane graben; sites in this latter area are also associated with overhangs or are at least in protected areas among the rocks. The pattern is not as clear in the Salt Creek Pocket Area, but Anasazi sites appear to cluster along cliffs in the northeastern corner of the tract and within a kilometer of Salt Creek (see maps in Appendix E).

What is clear from these preliminary data is that Anasazi sites in the two tracts are not necessarily correlated with the availability of water and arable land, but seem to be more correlated with the presence of natural overhangs. It is also clear that the Anasazi using the survey parcels did so on a temporary and short-term basis and probably maintained more substantial sites elsewhere. Whether they had a biseasonal residence pattern or maintained more permanent homes in the highlands cannot be addressed with the current data.

#### Fremont Settlement Patterns

Due to the paucity of Fremont sites found during the survey, no conclusions can be made regarding Fremont settlement patterns. The possible Fremont site is a rock art panel and reflects short-term use. This research issue will be addressed in future years if sufficient data are available.

## Domain 3: Environmental Adaptation

### Research Issue 4

#### Archaic and Basketmaker II Adaptation

Archaic period sites primarily consisting of rock art panels and field camps are scattered throughout both survey areas. Artifacts recorded at the field camps are indicative of local resource exploitation. Associated lithic debitage and tools are evidence that local mineral resources were exploited and tools were manufactured at the field camps. This activity seems to have been particularly important in the Salt Creek Pocket Area. The abundance of one-hand manos and basin metates at many of the field camps in both areas indicates that the gathering and processing of native plants was another important activity. Flotation analysis of five samples from two different Late Archaic hearths suggests that various grasses, juniper, goosefoot and cactus were important economic plants (see Chapter 7). Most of the Archaic camps are located in areas where these plants are readily available. The nature of the sites and their distance from permanent water suggests that they were used during a season when seeds from certain plant species were available and when water could be obtained from the ephemeral pothole reservoirs found near the sites.

#### Anasazi Adaptation

The Anasazi groups that occupied the two survey areas appear to have done so for the same reasons that Archaic groups used the areas—to gather local resources such as stone and various plant foods. Anasazi field camps and habitations are located in the same types of resource zones as the Archaic field camps and it is possible that some of the Anasazi field camps are actually gathering camps. The small size of these sites, the seeming lack of nearby arable land, the lack of corn-

grinding implements (two-hand manos and trough metates) and storage facilities (granaries), and the low frequencies of features and artifacts at these sites all point to a short-term, specialized use.

Usually small Anasazi sites of this type are assumed to be field houses or farmsteads occupied during the agricultural season (cf. Ward 1978). But the Anasazi small sites in Devils Lane and Salt Creek Pocket do not appear to have been occupied for agricultural purposes; they appear to have been gathering and perhaps hunting camps used on a seasonal basis. More permanent bases apparently were located elsewhere, possibly in the Beef Basin area and the upper reaches of Salt Creek where habitation sites are known to occur (Rudy 1955; Sharrock 1966). Unlike such habitation sites, most of the Anasazi sites found in the two survey parcels do not co-occur with water and arable land, further evidence confirming their seasonal and temporary usage. Instead, they seem to correlate with the presence of natural shelters.

Based on our current knowledge of Anasazi sites in the Needles District, we propose the following model for Anasazi adaptation and settlement. Anasazi groups were based in pueblos in Beef Basin, upper Salt Creek or other high-elevation and well-watered areas such as Elk Ridge. Here they were able to farm and live on a year-round basis. Resources available in the arid, nonarable portions of the Needles District were obtained during special hunting and gathering forays. Because of the distance between these resources and the home base, it was often necessary to establish short-term camps. A further extension of the model suggests that many of the small sites found in the Devils Lane Area were stopover points for groups moving down to farmsteads on the Colorado and Green rivers. Lucius (1976) has reported many farmsteads along these rivers in the Maze District and others are also known along the river in Island-in-the-Sky (Fior and Eininger 1987). The Devils Lane graben is a natural route between the Beef

Basin area and the river, and it is not unreasonable to think that Anasazi groups moving between the two areas made short-term stops along the way.

As is the case with any model, more data are needed to verify those presented here. It is hoped that subsequent fieldwork by P-III Associates can build and refine these models and use them to draw a more complete picture of prehistoric occupation in the Needles District.

### Other Issues

Both the Anasazi and Archaic sites display very similar settlement patterns in the two survey areas. Sites of both groups tend to be located near cliff faces, outcrops or in overhangs—areas that afford some protection and water during certain seasons. The pinyon-juniper woodland also seems to have been preferred by both groups, perhaps because of the resources provided by the woodland. The nature of the sites indicates that the Salt Creek Pocket and Devils Lane areas were used for the gathering of certain resources, even by the basically agricultural Anasazi. For this reason, it is not surprising that the settlement patterns of the two groups are similar. If Anasazi use of the areas had been geared toward the production of crops, then some differences in settlement patterns might be expected. But all the evidence suggests that the Anasazi were primarily using these areas on a short-term, ephemeral basis. We conclude that Anasazi and Archaic settlement patterns are basically similar because both groups were using the survey areas for the same purpose—the procuring of available resources. A similar pattern was observed for the upland areas of the Maze District (Lucius 1976).

## Domain 4: Cultural Interaction

### Research Issue 5

#### Fremont and Anasazi

The question of Anasazi/Fremont contact has long been at the forefront of research in the Canyonlands area. Previous work in the park has indicated that Fremont traits are generally limited to Fremont-style rock art on the south side of the Colorado River and small ephemeral sites on the north side of the river. Our findings during the 1985 survey seem to verify this pattern, but unfortunately add little information to the problem.

The site with Fremont traits is a pictograph panel depicting Southern San Rafael Fremont Style and Barrier Canyon Style anthropomorphs as well as Anasazi handprints. This site is located at the top of SOB Hill, an important passageway linking the upper and lower sections of the Devils Lane graben. The graben itself could have also been a thoroughfare for groups moving from the river to the upland areas of the park. The presence of both Archaic and Anasazi style rock art throughout the graben suggests that both groups left their mark as they traveled through the area. However, it is difficult to say whether the single occurrence of Southern San Rafael Fremont figures indicates Anasazi adaptation of a Fremont style or actual Fremont presence. We tentatively argue the latter because we believe that the Fremont style would have been more common if, in fact, it had been borrowed by the Anasazi.

Because this area was not intensively occupied by Anasazi groups and was apparently used by them as a natural resource procurement zone, it may have also been available to Fremont groups crossing the river on procurement expeditions. These trips were perhaps limited to hunting or lithic material gathering—activities that are not likely to result in the deposition of characteristic Fremont diagnostics. The Fremont rock art may be related to

these activities, perhaps simply signifying that these people passed through the area. This model of co-use of the Devils Lane Area by Anasazi and Fremont peoples assumes contemporaneity of the two groups. While there is no evidence to suggest that this is the case, the occupation dates of some of the closest Fremont habitation sites, those near the Henry Mountains (Jennings and Sammons-Lohse 1981), are consistent with the extensive Pueblo II-Pueblo III Anasazi occupation in the Needles District.

While the main area of Fremont occupation still appears to be somewhere north and west of the park, it is possible that Anasazi and Fremont groups encountered each other within the park. Many of the unwatered arid zones not used by the Anasazi for agriculture might have been areas of common use by both groups, areas where the groups exchanged ideas and resources. This is obviously an avenue for further research.

#### Kayenta and Mesa Verde Anasazi

Very little light is shed on the nature of contact between the Mesa Verde and Kayenta Anasazi based on findings of the 1985 survey. Only two Kayenta Anasazi sherds were recorded among all the sites inventoried in both survey areas. This is not surprising considering the nature and presumed function of the Anasazi sites in the survey areas. None of the sites were occupied on a long-term basis and all were apparently used for specialized gathering activities or as stopover points while moving from farm lands to a home base. Assuming that Kayenta tradewares were regarded as special items because they had to be obtained through trade, it is unlikely that such items would have been taken on

foraging expeditions or used in the summer farmstead. This proposition could be verified by studying ceramic assemblages from all Anasazi sites in the park to determine if there is a correlation between ceramic types and site function.

The kinds of architectural remains discovered during the 1985 survey are not very amenable to evaluating construction styles as most of the structures are dry-laid and rather ephemeral. Assuming that such structures were intended for short-term use, it seems unlikely that much effort would have been expended building classic Mesa Verde style architecture even if the builders were from the Mesa Verde core area. Thus, the Kayenta-appearing architecture at the sites recorded by the 1985 survey is probably the result of intended function for sporadic use rather than cultural preference or influence from Kayenta peoples. If larger and more substantial sites are discovered during future years of the project, it may be possible to address this topic in greater detail.

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The only evidence for long-distance procurement or trade is an isolated obsidian projectile point and a piece of obsidian debitage on a Pueblo II habitation site in the Salt Creek Pocket Area. Unfortunately, the point is not diagnostic and no information is available on which cultural group may have brought it to the park. However, its presence does demonstrate long-distance trade or procurement and suggests that additional obsidian artifacts may be found in the park. We recommend that future obsidian artifacts be collected and sourced to obtain additional information on possible trade networks and cultural interaction.

RESEARCH ISSUE



## CHAPTER 9

# SUMMARY AND MANAGEMENT RECOMMENDATIONS

by Nancy J. Hewitt and Beissy L. Tipps

### Summary

Archeological survey of two selected areas in the Needles District of Canyonlands National Park resulted in the discovery and recordation of 142 sites and 76 isolated finds. The information obtained from the sites indicates that prehistoric people used these two areas on an intermittent basis, primarily to hunt, harvest wild plants and procure lithic raw materials. Both areas are in arid, upland environments that do not appear to have been particularly amenable to agricultural activities.

The earliest use of the survey areas was by Archaic groups followed by an Anasazi occupation that might have begun by Basketmaker III-Pueblo I. The primary Anasazi occupation took place during the late Pueblo II-early Pueblo III period. Fremont groups may have used the Devils Lane Area but on a limited basis. There is no evidence for Protohistoric use of the areas by Ute, Paiute or Navajo peoples. Historic activities in the two areas were associated with cattle ranching and mining by Euroamericans.

One of the goals of the survey was to address questions posed in the research design. In this regard, the survey was basically successful because we were able to establish a basic cultural and chronological

framework, address several questions relating to rock art styles, and develop preliminary models of settlement patterns and environmental adaptation. Evidence for cultural interaction was also identified and discussed. However, as is often the case, the more we learn, the more questions we can pose. The results of the 1985 survey will therefore provide a strong basis for modifying the research design and learning more about Canyonlands' past in subsequent years.

### Management Data

Although sites within a National Park are protected by virtue of National Park Service policies, some sites need special attention to help in their preservation. Recordation is one means of preservation; stabilization is another. None of the sites recorded during the 1985 survey are recommended for stabilization. Only a handful of sites contain architectural remains and these consist of poorly constructed, dry-laid walls with only a few courses still standing. Any stabilization would be superfluous.

Another vehicle for preservation and protection is the National Register of Historic Places. Fourteen sites located during the 1985 survey are recommended for nomination to the Register. These sites and

## SUMMARY AND MANAGEMENT RECOMMENDATIONS

their usefulness to the understanding of Canyonlands prehistory are discussed below. Site forms for these and all other sites recorded during the 1985 survey are included in Appendix F.

Site 42SA1996 contains excellent examples of the Barrier Canyon Style rock art. The 22 figures provide a good opportunity to study internal designs of these figures and compare them to designs on figures at other large Barrier Canyon panels (Table 17).

Two sites (42SA17090 and 42SA17092) are of particular interest because of their potential for dating the Barrier Canyon Anthropomorphic Style rock art. Both sites contain panels of this rock art style and midden deposits that are believed to be the remains of Archaic occupation. Barrier Canyon Style rock art is infrequently associated with other cultural materials that might help date the art. These two sites should be considered significant because of their potential to achieve this goal. They could also yield important data on Archaic subsistence patterns.

Site 42SA17174 contains extensive panels of Barrier Canyon Style art and some Glen Canyon Linear Style motifs. Both styles of rock art are believed to be Archaic and this site could add data about the relationship of the two styles. In addition, pecked Barrier Canyon Style anthropomorphs are rare, and this site is an excellent example of this unusual variation.

Site 42SA17187 contains some excellent examples of Glen Canyon Linear Style petroglyphs alongside some possibly Anasazi petroglyphs. This Linear Style has only recently been recognized within Canyonlands National Park and deserves special study. It has been assumed to date to the Late Archaic period, but it has not been positively dated. Site 42SA17187 might contain deposits that could help determine the age of the associated panels. The surface materials appear to be Anasazi and are probably associated with the Anasazi rock art, but there is evidence of

buried materials that may be earlier and associated with the Glen Canyon Linear Style motifs.

Site 42SA17106 contains at least one Glen Canyon Linear Style figure and several panels of indeterminate but possible Anasazi rock art. This site presents an excellent opportunity to study the superposition of these styles, which would aid in their chronological placement.

Site 42SA17141 is primarily a Late Archaic habitation site with hearth features that could yield subsistence and more precise dating information. Detailed studies of the lithic assemblage could also identify technological traits diagnostic of the Archaic period which could be used to date Archaic sites without features and chipped stone tools such as projectile points.

Site 42SA17121 is a Pueblo I habitation site with a midden and two surface rooms. This site is significant because it could yield subsistence and more precise dating information on the poorly known Pueblo I occupation of the Needles District. In addition, if a larger sample of pottery is present, more might be learned about the regional affiliation of these early Anasazi.

Four Anasazi sites (42SA17123, 42SA17125, 42SA17163 and 42SA17184) are recommended for inclusion in the National Register because of the economic data that might be obtained from the associated hearth, room and/or midden deposits. Anasazi sites in this part of the Needles District are different from Anasazi sites in the more southerly portions of the district in that they are small, consist of only a few poorly constructed rooms and do not appear to have been permanently occupied. In the body of this report, it has been suggested that these sites are gathering camps used during certain seasons by Anasazi groups that lived elsewhere for the rest of the year. To test this hypothesis, micro- and macrobotanical data from these sites would be of utmost importance. Further, the relationship between these Anasazi sites and Anasazi sites in the rest of the park is unclear; data from these

## SUMMARY AND MANAGEMENT RECOMMENDATIONS

Table 17. Summary of sites potentially eligible to the National Register of Historic Places.

Site Number	Survey Area	Cultural Affiliation	Significance
42SA1996	DL	Archaic	The 22 Barrier Canyon Style figures provide an excellent opportunity to study internal design characteristics of the Barrier Canyon Style.
42SA17090	SC	Archaic/Anasazi	The midden deposits at this field camp may provide dating information on Barrier Canyon Anthropomorphic Style rock art.
42SA17092	SC	Archaic	The midden deposits at this habitation site may provide dating information on Barrier Canyon Anthropomorphic Style rock art.
42SA17106	DL	Archaic	The Glen Canyon Linear Style art at this limited activity site could be compared to the indeterminate but probably later rock art to aid in the chronological placement of the two types.
42SA17121	DL	Anasazi	The midden deposits at this Pueblo I habitation site could yield subsistence and more precise dating information, and may contain pottery which could be used to identify the regional affiliation of these early Anasazi.
42SA17123	DL	Anasazi	The midden deposits at this habitation site could provide subsistence data.
42SA17125	DL	Anasazi	The midden deposits at this field camp could provide subsistence data.
42SA17141	DL	Archaic/Anasazi	The hearths at this site could add subsistence data and more precise dating information on the Late Archaic.
42SA17163	SC	Anasazi	The hearth and midden deposits at this habitation site could yield subsistence data for the Pueblo II period and may also contain sherds which would provide information on regional affiliation.
42SA17174	SC	Archaic	The Barrier Canyon Anthropomorphic Style and Glen Canyon Linear Style rock art at this limited activity site provide an opportunity to study the relationship of these two Archaic rock art styles.
42SA17184	SC	Anasazi	The deposits in the room at this site could provide subsistence data.

## SUMMARY AND MANAGEMENT RECOMMENDATIONS

Table 17. Summary of sites potentially eligible to the National Register of Historic Places (continued).

Site Number	Survey Area	Cultural Affiliation	Significance
42SA17187	SC	Archaic/Anasazi	Deposits at this field camp may provide dating information on Glen Canyon Linear Style rock art.
42SA17196	SC	Aboriginal	The midden deposits at this habitation site could provide chronological and economic information.
42SA17198	SC	Aboriginal	The midden deposits at this habitation site could provide chronological and economic information.

NOTE: DL = Devils Lane Area, SC = Salt Creek Pocket Area.

sites would be invaluable in addressing this problem.

Finally, two habitation sites of prehistoric age but unknown affiliation are recommended for inclusion in the National Register of Historical Places. Sites 42SA17196 and 42SA17198 contain a wide variety of tools as well as midden deposits that could yield both chronological and economic data. These data would be valuable no matter what their affiliation because neither Archaic nor Anasazi subsistence

patterns are well understood in Canyonlands and the occupational span of both groups can certainly be refined.

In summary, many of the sites recorded during the 1985 survey contain important artifacts, features and deposits that can be used to elucidate Canyonlands' prehistory. These sites should be preserved and protected so that the important information will be available for study at some future date.



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## APPENDIX A

### LEGAL LOCATIONS OF THE SURVEY AREAS

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## LEGAL LOCATIONS OF THE SURVEY AREAS

This appendix describes the legal locations of the parcels surveyed during this project.

### Salt Creek Pocket Area

The Salt Creek Pocket Area is entirely contained within Sections 20, 21, 22, 27, 28, 29, 32, 33 and 34 of Township 30 South, Range 20 East (Figure 2). The park boundary defines the north and east limits of the survey area, with the floodplain of Salt Creek serving as the general western boundary. The southern extent of the survey area is defined as the north-facing cliff line in Sections 33 and 34 and by an arbitrary east/west line that connects the 5200-ft contour line of Section 33 with the western boundary of the survey area.

### Devils Lane Area

The survey parcel referred to as the Devils Lane Area is a corridor beginning at the northern edge of Section 29 near the Silver Stairs, Township 30 South, Range 19 East, extending southwest between the vertical cliffs of the graben in Sections 31 and 32 of the same township and range, and ending at an arbitrary boundary that includes a portion of Butler Flat and Chesler Canyon Wash in Township 30 1/2 South, Ranges 18 and 19 East, and in Township 31 South, Ranges 18 and 19 East.



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APPENDIX B

CATALOG AND LOCATIONS OF ISOLATED FINDS

Table B-1. Catalog of Isolated Finds (IFs) in the Salt Creek Pocket Area.

IF Number	Description
1	1 large decortication flake of red chert
	1 small piece of shatter of white chert
2	1 large piece of shatter of white chert
	1 small piece of shatter of white chert
3	1 medium secondary flake of red chert
4	1 medium piece of shatter of white chert
5	1 small, shallowly side-notched, rocker-based, white chert projectile point
6	1 large white chalcedony flake with edge retouch
	1 large secondary flake of brown chert
	2 large decortication flakes of red chert
7	1 small secondary flake of white chert
	1 gray quartzite biface fragment
8	1 red chert core
9	1 small secondary flake of red chert
	1 large decortication flake of tan chert
	1 large primary flake of red chert
10	1 large decortication flake of red chert
11	1 broken, bifacially used, medium-grained sandstone, one-handed mano
	1 palm-sized brown chert side scraper
12	1 small secondary flake of white chalcedony
13	1 small red chert core
14	1 bifacially used, fine-grained quartzite, one-handed mano
15	1 medium secondary flake of white chalcedony
16	3 very small tertiary flakes of red chert
	2 medium secondary flakes of white chalcedony
17	2 small secondary flakes of red chert
	1 small secondary flake of white chalcedony
18	8 medium secondary flakes of white chalcedony indicative of a single lithic reduction episode
19	1 basal portion of a gray chert biface
	1 small secondary flake of tan quartzite
20	1 small secondary flake of pink chalcedony
	1 ash stain (probably of historic derivation)
21	3 small secondary flakes of red chert
32	1 tip portion of an algalitic chert biface, hinge fractured
33	1 basal portion of a white chert biface
34	1 medium secondary flake of white chalcedony
35	1 medium secondary flake of white chalcedony
36	1 whole, large, purple Kayenta limestone, pecked, basin metate
37	1 small secondary flake of red chert
	1 small secondary flake of purple chalcedony
38	1 basal portion of a white chalcedony biface
39	1 unifacially used, coarse-grained sandstone, one-handed mano
	2 medium secondary flakes of red chert
40	1 medium secondary flake of orange chert
	1 medium secondary flake of red chert

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## CATALOG AND LOCATIONS OF ISOLATED FINDS

Table B-1. Catalog of Isolated Finds (IFs) in the Salt Creek Pocket Area (continued).

IF Number	Description
41	1 medium secondary flake of green chert
	1 medium secondary flake of red chert
42	1 large decortication flake of red chert
43	1 medium secondary flake of red chert
44	1 medium secondary flake of white chert
	1 medium secondary flake of red chert
45	4 medium secondary flakes of red chert
	1 medium secondary red chert flake with edge retouch
46	2 medium secondary flakes of white chalcedony
47	1 complete, white chert, Rose Spring/Type B projectile point
48	1 base and midsection of a large corner-notched, gray mottled chert, projectile point
49	1 large decortication flake of brown chert
50	1 small secondary flake of red chert
51	1 small secondary flake of red chert
52	1 medium secondary flake of red chert
53	1 medium corner-notched projectile point
	1 medium secondary flake of red chert
54	1 medium secondary flake of red chert
	1 small tertiary flake of gray chert
55	2 medium secondary flakes of white chert
56	1 basal fragment of a gray quartzite projectile point
	1 large secondary flake of red chert
	1 medium piece of shatter of red chert
	1 medium secondary flake of brown chert
57	1 half of a thin, sandstone, pecked, basin metate
	1 large white chalcedony core
58	1 medium secondary flake of red chert
59	1 unifacially used, coarse-grained sandstone, pecked, rocker-shaped, two-handed mano
	2 medium secondary flakes of red chert
60	1 medium secondary flake of red chert
61	1 informal hearth ca. 6 cm deep and 70 cm in diameter (probably historic)
62	1 large secondary flake of red chert
63	1 medium secondary flake of red chert
64	1 small secondary flake of red chert
65	1 medium decortication flake of red chert
	1 small decortication flake of red chert
	1 medium secondary flake of white chalcedony
66	1 large decortication flake of brown chert
	1 medium decortication flake of red chert
67	1 small resharpened, large side-notched, rocker-based, obsidian projectile point
	1 large decortication flake of red chert
	1 medium secondary flake of algalitic chert
	1 medium secondary flake of red chert

## CATALOG AND LOCATIONS OF ISOLATED FINDS

Table B-1. Catalog of Isolated Finds (IFs) in the Salt Creek Pocket Area (continued).

IF Number	Description
68	5 medium secondary flakes of red chert
	1 medium secondary flake of algalitic chert
69	3 medium secondary flakes of red chert
	2 medium secondary flakes of brown chert
70	4 medium secondary flakes of red chert
71	2 medium secondary flakes of red chert
72	1 small triangular, white chert projectile point
73	3 medium secondary flakes of white chert
	1 medium secondary flake of red chert
74	1 small secondary flake of pink chalcedony
	1 small secondary flake of white chert
	3 small secondary flakes of gray quartzite
	1 small red chert core
75	1 large secondary flake of pink quartzite
76	1 small purple chalcedony hammerstone

Table B-2. Catalog of Isolated Finds (IFs) in the Salt Creek Pocket Area.

IF Number	Description
22	1 large black chert core 2 medium secondary flakes of mottled gray-brown chert
23	2 large blocky primary reduction flakes of gray chert
24	1 large primary flake of red-brown chert
25	5 primary and secondary flakes of gray-brown and red-brown chert washing down from outside the survey area
26	1 large yellow limey chert, crudely flake core
27	2 medium secondary thinning flakes of brown chert 1 small tertiary flake of gray quartzite
28	1 basal portion of a crude, gray quartzite biface
29	3 bowls - 2 Mesa Verde Black-on-white and 1 McElmo Black-on-white, all broken
30	1 large sherd from one of the Mesa Verde Black-on-white bowls 3 secondary flakes of white chalcedony 1 primary flake of white chalcedony 1 medium secondary flake of gray chert 1 medium secondary flake of algalitic chert
31	1 large, tan sandstone, slab metate

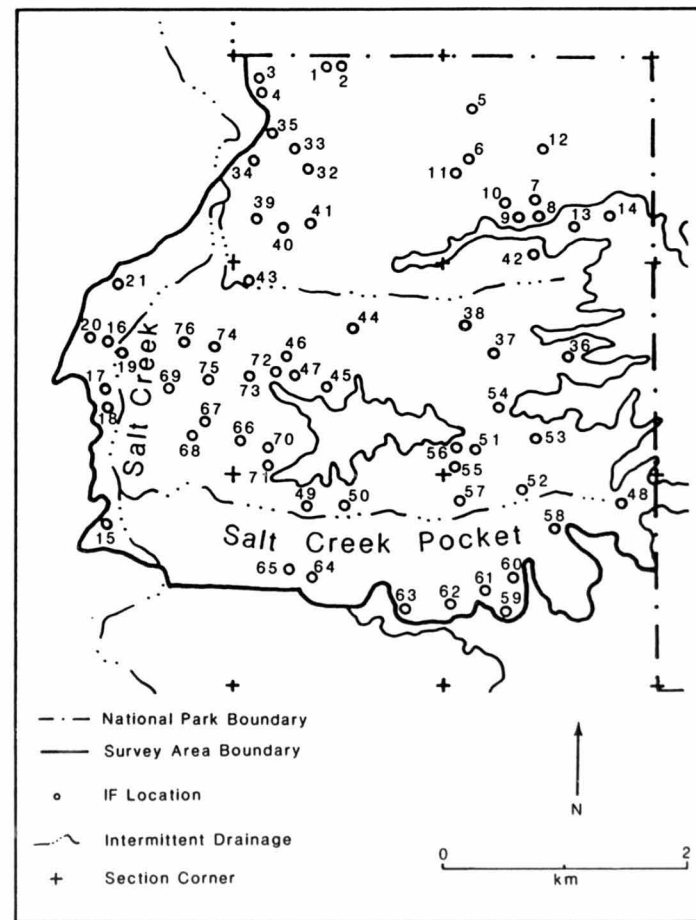


Figure B-1. Isolated find locations in the Salt Creek Pocket Area.

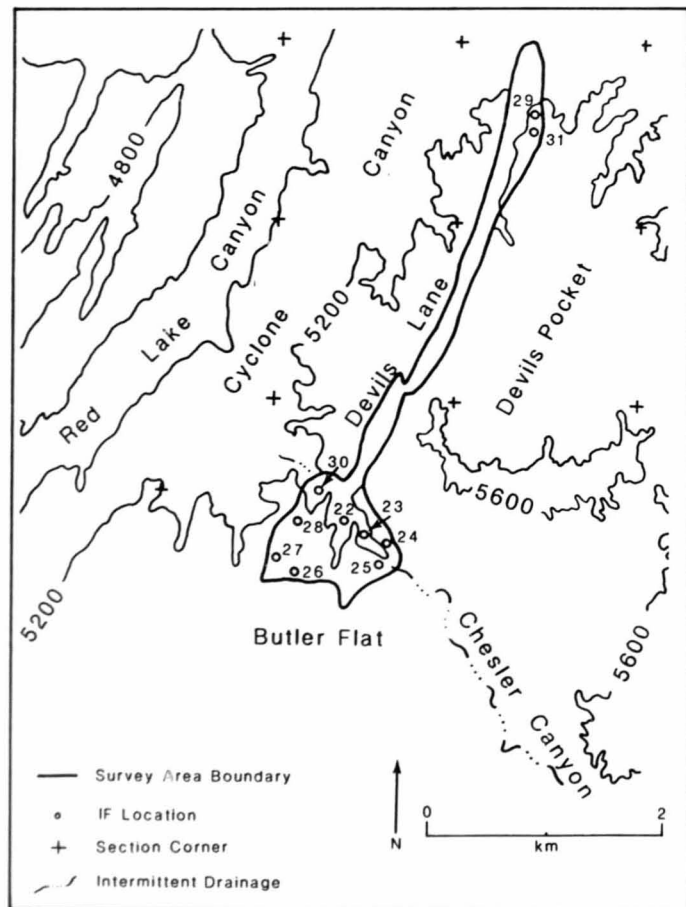


Figure B-2. Isolated find locations in the Devils Lane Area.

# APPENDIX C

## CORRELATION OF TEMPORARY FIELD NUMBERS AND PERMANENT SMITHSONIAN SITE NUMBERS

## CORRELATION OF SITE NUMBERS

Table C-1. Correlation of temporary field numbers and permanent Smithsonian site numbers.

Temporary Number	Permanent Smithsonian Number	Temporary Number	Permanent Smithsonian Number
1	42SA17082	43	42SA17124
2	42SA17083	44	42SA17125
3	42SA17084	45	42SA17126
4	42SA17085	46	42SA17127
5	42SA17086	47	42SA17128
6	42SA17087	48	42SA17129
7	42SA17088	49	42SA17130
8	42SA17089	50	42SA17131
9	42SA17090	51	42SA17132
10	42SA17091	52	42SA17133
11	42SA17092	53	42SA17134
12	42SA17093	54	42SA17135
13	42SA17094	55	42SA17136
14	42SA17095	56	42SA17137
15	42SA17096	57	42SA17138
16	42SA17097	58	42SA17139
17	42SA17098	59	42SA17140
18	42SA17099 <sup>a</sup>	60	42SA17141
19	42SA17100 <sup>b</sup>	61	42SA17142
20	42SA17101 <sup>b</sup>	62	42SA17143
21	42SA17102	63	42SA17144
22	42SA17103	64	42SA17145
23	42SA17104	65	42SA17146
24	42SA17105	66	42SA17147
25	42SA17106	67	42SA17148
26	42SA16825 <sup>a</sup>	68	42SA17149
27	42SA17108	69	42SA17150
28	42SA17109	70	42SA17151
29	42SA17110	71	42SA17152
30	42SA17111	72	42SA17153
31	42SA17112	73	42SA17154
32	42SA17113	74	42SA17155 <sup>b</sup>
33	42SA17114	75	42SA17156
34	42SA17115	76	42SA17157
35	42SA17116	77	42SA17158
36	42SA1450 <sup>a</sup>	78	42SA17159
37	42SA17118	79	42SA17160
38	42SA1996 <sup>a</sup>	80	42SA17161
39	42SA17120	81	42SA17162
40	42SA17121	82	42SA17163
41	42SA1448 <sup>a</sup>	83	42SA17164
42	42SA17123	84	42SA17165

# CORRELATION OF SITE NUMBERS

Table C-1. Correlation of temporary field numbers and permanent Smithsonian site numbers (continued).

Temporary Number	Permanent Smithsonian Number	Temporary Number	Permanent Smithsonian Number
85	42SA17166 <sup>b</sup>	114	42SA17195 <sup>b</sup>
86	42SA17167 <sup>b</sup>	115	42SA17196 <sup>b</sup>
87	42SA17168 <sup>b</sup>	116	42SA17197 <sup>b</sup>
88	42SA17169 <sup>b</sup>	117	42SA17198 <sup>b</sup>
89	42SA17170	118	42SA17199 <sup>b</sup>
90	42SA17171	119	42SA17200 <sup>b</sup>
91	42SA17172	120	42SA17201 <sup>b</sup>
92	42SA17173	121	42SA17202 <sup>b</sup>
93	42SA17174	122	42SA17203 <sup>b</sup>
94	42SA17175	123	42SA17204 <sup>b</sup>
95	42SA17176	124	42SA17205 <sup>b</sup>
96	42SA17177	125	42SA17206 <sup>b</sup>
97	42SA17178	126	42SA17207 <sup>b</sup>
98	42SA17179	127	42SA17208 <sup>b</sup>
99	42SA17180 <sup>b</sup>	128	42SA17209 <sup>b</sup>
100	42SA17181	129	42SA17210 <sup>b</sup>
101	42SA17182	130	42SA17211 <sup>b</sup>
102	42SA17183 <sup>b</sup>	131	42SA17212 <sup>b</sup>
103	42SA17184 <sup>b</sup>	132	42SA17213
104	42SA17185 <sup>b</sup>	133	42SA17214
105	42SA17186 <sup>b</sup>	134	42SA1451 <sup>a</sup>
106	42SA17187 <sup>b</sup>	135	42SA8493 <sup>a</sup>
107	42SA17188 <sup>b</sup>	136	42SA17217
108	42SA17189 <sup>b</sup>	137	42SA17218
109	42SA17190 <sup>b</sup>	138	42SA17219
110	42SA17191 <sup>b</sup>	139	42SA17220 <sup>b</sup>
111	42SA17192 <sup>b</sup>	140	42SA17221 <sup>b</sup>
112	42SA17193 <sup>b</sup>	141	42SA17222 <sup>b</sup>
113	42SA17194 <sup>b</sup>	142	42SA17223 <sup>b</sup>

<sup>a</sup>These sites were previously recorded.

<sup>b</sup>These sites are in the Salt Creek Archeological District.

## APPENDIX D

### TABULAR SITE DATA



Table D-1. Location of each site by survey parcel and geographic location.

Site Number	Survey Parcel	Geographic Location
42SA1448	Devils Lane Area	Devils Lane
42SA1450	Devils Lane Area	Devils Lane
42SA1451	Salt Creek Pocket Area	Lower Salt Creek Canyon
42SA1996	Devils Lane Area	Devils Lane
42SA8493	Salt Creek Pocket Area	Salt Pocket Uplands
42SA16825	Devils Lane Area	Devils Lane
42SA17082	Salt Creek Pocket Area	Salt Pocket Uplands
42SA17083	Salt Creek Pocket Area	Lower Salt Creek Canyon
42SA17084	Salt Creek Pocket Area	Salt Pocket Uplands
42SA17085	Salt Creek Pocket Area	Salt Pocket Uplands
42SA17086	Salt Creek Pocket Area	Salt Pocket Uplands
42SA17087	Salt Creek Pocket Area	Salt Pocket Uplands
42SA17088	Salt Creek Pocket Area	Salt Pocket Uplands
42SA17089	Salt Creek Pocket Area	Salt Pocket Uplands
42SA17090	Salt Creek Pocket Area	Salt Pocket Uplands
42SA17091	Salt Creek Pocket Area	Salt Pocket Uplands
42SA17092	Salt Creek Pocket Area	Salt Pocket Uplands
42SA17093	Salt Creek Pocket Area	Salt Pocket Uplands
42SA17094	Salt Creek Pocket Area	Salt Pocket Uplands
42SA17095	Salt Creek Pocket Area	Salt Pocket Uplands
42SA17096	Salt Creek Pocket Area	Salt Pocket Uplands
42SA17097	Salt Creek Pocket Area	Salt Pocket Uplands
42SA17098	Salt Creek Pocket Area	Salt Pocket Uplands
42SA17099	Salt Creek Pocket Area	Lower Salt Creek Canyon
42SA17100	Salt Creek Pocket Area	Squaw Butte
42SA17101	Salt Creek Pocket Area	Lower Salt Creek Canyon
42SA17102	Salt Creek Pocket Area	Lower Salt Creek Canyon
42SA17103	Salt Creek Pocket Area	Lower Salt Creek Canyon
42SA17104	Devils Lane Area	Devils Lane
42SA17105	Devils Lane Area	Devils Lane
42SA17106	Devils Lane Area	Devils Lane
42SA17108	Devils Lane Area	Devils Lane
42SA17109	Devils Lane Area	Devils Lane
42SA17110	Devils Lane Area	Devils Lane
42SA17111	Devils Lane Area	Devils Lane
42SA17112	Devils Lane Area	Devils Lane
42SA17113	Devils Lane Area	Devils Lane
42SA17114	Devils Lane Area	Devils Lane
42SA17115	Devils Lane Area	Devils Lane
42SA17116	Devils Lane Area	Devils Lane
42SA17118	Devils Lane Area	Devils Lane
42SA17120	Devils Lane Area	Devils Lane
42SA17121	Devils Lane Area	Chesler Canyon
42SA17123	Devils Lane Area	Chesler Canyon
42SA17124	Devils Lane Area	Chesler Canyon
42SA17125	Devils Lane Area	Chesler Canyon



TABULAR SITE DATA

Table D-1. Location of each site by survey parcel and geographic location (continued).

Site Number	Survey Parcel	Geographic Location
42SA17220	Salt Creek Pocket Area	Salt Pocket Uplands
42SA17221	Salt Creek Pocket Area	Lower Salt Creek Canyon
42SA17222	Salt Creek Pocket Area	Lower Salt Creek Canyon
42SA17223	Salt Creek Pocket Area	Salt Pocket Uplands

TABULAR SITE DATA

Table D-2. List of sites and their cultural affiliation and age.

Site Number	Number of Occupations	Cultural Affiliation	Age
42SA1448	1	Anasazi	Pueblo II-III
42SA1450	3	Archaic/Fremont/Anasazi	Archaic/Late Prehistoric/ Pueblo II-III
42SA1451	1	Euroamerican	Historic
42SA1996	1	Archaic	Archaic
42SA8493	1	Anasazi	Pueblo II-III
42SA16825	2	Archaic/Anasazi	Archaic/Pueblo II-III
42SA17082	1	Aboriginal	Prehistoric
42SA17083	1	Aboriginal	Prehistoric
42SA17084	1	Aboriginal	Prehistoric
42SA17085	1	Aboriginal	Prehistoric
42SA17086	1	Aboriginal	Prehistoric
42SA17087	1	Anasazi	Late Prehistoric
42SA17088	1	Aboriginal	Prehistoric
42SA17089	1	Aboriginal	Prehistoric
42SA17090	2	Archaic/Anasazi	Archaic/Pueblo II
42SA17091	1	Aboriginal	Prehistoric
42SA17092	2	Archaic	Early Archaic/Late Archaic
42SA17093	2	Aboriginal/Euroamerican	Prehistoric/Historic
42SA17094	1	Anasazi	Pueblo III
42SA17095	1	Anasazi	Late Prehistoric
42SA17096	1	Archaic	Middle Archaic
42SA17097	1	Aboriginal	Prehistoric
42SA17098	1	Aboriginal	Prehistoric
42SA17099	1	Archaic	Archaic
42SA17100	1	Aboriginal	Prehistoric
42SA17101	1	Aboriginal	Prehistoric
42SA17102	1	Aboriginal	Prehistoric
42SA17103	1	Aboriginal	Prehistoric
42SA17104	1	Aboriginal	Prehistoric
42SA17105	1	Archaic	Archaic
42SA17106	1	Archaic	Archaic
42SA17108	1	Anasazi	Pueblo II-III
42SA17109	1	Aboriginal	Prehistoric
42SA17110	1	Aboriginal	Prehistoric
42SA17111	1	Aboriginal	Prehistoric
42SA17112	1	Anasazi	Pueblo II-III
42SA17113	1	Anasazi	Pueblo III
42SA17114	1	Archaic	Archaic
42SA17115	1	Anasazi	Pueblo II-III
42SA17116	1	Aboriginal	Prehistoric
42SA17118	1	Anasazi	Late Prehistoric
42SA17120	1	Euroamerican	Historic
42SA17121	1	Anasazi	Pueblo I
42SA17123	1	Anasazi	Late Prehistoric
42SA17124	1	Anasazi	Pueblo II-III
42SA17125	1	Anasazi	Pueblo I-II
42SA17126	1	Anasazi	Pueblo II-III
42SA17127	1	Anasazi	Late Prehistoric
42SA17128	2	Basketmaker/Anasazi	Basketmaker III-Pueblo I/ Pueblo II-III
42SA17129	1	Aboriginal	Prehistoric
42SA17130	1	Aboriginal	Prehistoric
42SA17131	1	Aboriginal	Prehistoric
42SA17132	1	Anasazi	Late Prehistoric
42SA17133	1	Anasazi	Pueblo III
42SA17134	1	Aboriginal	Prehistoric

## TABULAR SITE DATA

Table D-2. List of sites and their cultural affiliation and age (continued).

Site Number	Number of Occupations	Cultural Affiliation	Age
42SA17135	1	Aboriginal	Prehistoric
42SA17136	1	Aboriginal	Prehistoric
42SA17137	1	Aboriginal	Prehistoric
42SA17138	1	Aboriginal	Prehistoric
42SA17139	1	Aboriginal	Prehistoric
42SA17140	1	Aboriginal	Prehistoric
42SA17141	2	Archaic/Anasazi	Late Archaic/Pueblo II-III
42SA17142	1	Aboriginal	Prehistoric
42SA17143	1	Aboriginal	Prehistoric
42SA17144	1	Anasazi	Late Prehistoric
42SA17145	1	Aboriginal	Prehistoric
42SA17146	1	Aboriginal	Prehistoric
42SA17147	1	Aboriginal	Prehistoric
42SA17148	1	Aboriginal	Prehistoric
42SA17149	1	Aboriginal	Prehistoric
42SA17150	1	Aboriginal	Prehistoric
42SA17151	1	Aboriginal	Prehistoric
42SA17152	1	Aboriginal	Prehistoric
42SA17153	1	Anasazi	Late Prehistoric
42SA17154	1	Anasazi	Late Prehistoric
42SA17155	1	Aboriginal	Prehistoric
42SA17156	1	Aboriginal	Prehistoric
42SA17157	2	Aboriginal/Euroamerican	Prehistoric/Historic
42SA17158	1	Anasazi	Late Prehistoric
42SA17159	1	Aboriginal	Prehistoric
42SA17160	1	Aboriginal	Prehistoric
42SA17161	1	Aboriginal	Prehistoric
42SA17162	1	Anasazi	Pueblo II-III
42SA17163	1	Anasazi	Pueblo II
42SA17164	1	Aboriginal	Prehistoric
42SA17165	1	Aboriginal	Prehistoric
42SA17166	1	Aboriginal	Prehistoric
42SA17167	1	Aboriginal	Prehistoric
42SA17168	1	Aboriginal	Prehistoric
42SA17169	1	Aboriginal	Prehistoric
42SA17170	1	Aboriginal	Prehistoric
42SA17171	1	Anasazi	Pueblo III
42SA17172	1	Aboriginal	Prehistoric
42SA17173	1	Aboriginal	Prehistoric
42SA17174	1	Archaic	Prehistoric
42SA17175	1	Aboriginal	Prehistoric
42SA17176	1	Aboriginal	Prehistoric
42SA17177	1	Anasazi	Pueblo II
42SA17178	1	Aboriginal	Prehistoric
42SA17179	1	Aboriginal	Prehistoric
42SA17180	1	Aboriginal	Prehistoric
42SA17181	1	Aboriginal	Prehistoric
42SA17182	1	Aboriginal	Prehistoric
42SA17183	1	Aboriginal	Prehistoric
42SA17184	1	Anasazi	Late Prehistoric
42SA17185	1	Aboriginal	Prehistoric
42SA17186	1	Aboriginal	Prehistoric
42SA17187	2	Archaic/Anasazi	Archaic/Pueblo II
42SA17188	1	Anasazi	Pueblo III
42SA17189	1	Aboriginal	Prehistoric
42SA17190	1	Aboriginal	Prehistoric
42SA17191	1	Aboriginal	Prehistoric

## TABULAR SITE DATA

Table D-2. List of sites and their cultural affiliation and age (continued).

Site Number	Number of Occupations	Cultural Affiliation	Age
42SA17192	1	Aboriginal	Prehistoric
42SA17193	1	Aboriginal	Prehistoric
42SA17194	1	Aboriginal	Prehistoric
42SA17195	1	Euroamerican	Historic
42SA17196	1	Aboriginal	Prehistoric
42SA17197	1	Aboriginal	Prehistoric
42SA17198	1	Aboriginal	Prehistoric
42SA17199	1	Aboriginal	Prehistoric
42SA17200	1	Aboriginal	Prehistoric
42SA17201	2	Archaic/Anasazi	Archaic/Pueblo II-III
42SA17202	1	Aboriginal	Prehistoric
42SA17203	1	Aboriginal	Prehistoric
42SA17204	1	Aboriginal	Prehistoric
42SA17205	1	Aboriginal	Prehistoric
42SA17206	1	Anasazi	Pueblo II-III
42SA17207	1	Aboriginal	Prehistoric
42SA17208	1	Aboriginal	Prehistoric
42SA17209	1	Aboriginal	Prehistoric
42SA17210	1	Aboriginal	Prehistoric
42SA17211	1	Aboriginal	Prehistoric
42SA17212	1	Aboriginal	Prehistoric
42SA17213	1	Aboriginal	Prehistoric
42SA17214	1	Aboriginal	Prehistoric
42SA17217	1	Aboriginal	Prehistoric
42SA17218	1	Aboriginal	Prehistoric
42SA17219	1	Anasazi	Late Prehistoric
42SA17220	1	Aboriginal	Prehistoric
42SA17221	1	Anasazi	Late Prehistoric
42SA17222	1	Aboriginal	Prehistoric
42SA17223	1	Aboriginal	Prehistoric

TABULAR SITE DATA

Table D-3. List of sites and their descriptive and functional types.

Site Number	Site Setting	Descriptive Site Type	Functional Site Type	Subfunctional Site Type
42SA1448	Shelter	Features without artifacts	Limited activity site	Communication
42SA1450	Shelter	Features without artifacts	Limited activity site	Communication
42SA1451	Shelter	Historic site	Historic site	Communication
42SA1996	Open	Features without artifacts	Limited activity site	Communication
42SA8493	Shelter	Sherd and lithic scatter	Field camp	Communication
42SA16825	Open	Feature without artifacts	Limited activity site	Primary and secondary lithic reduction
42SA17082	Open	Lithic scatter	Limited activity site	
42SA17083	Open	Lithic scatter	Field camp	
42SA17084	Open	Lithic scatter	Limited activity site	Secondary lithic reduction
42SA17085	Open	Lithic scatter	Limited activity site	Primary and secondary lithic reduction
42SA17086	Open	Lithic scatter	Limited activity site	Secondary lithic reduction
42SA17087	Open	Sherd and lithic scatter	Limited activity site	Secondary lithic reduction
42SA17088	Open	Lithic scatter	Limited activity site	Primary and secondary lithic reduction
42SA17089	Open	Lithic source area	Limited activity site	Lithic procurement/primary lithic reduction
42SA17090	Open	Sherd and lithic scatter with feature	Field camp	
42SA17091	Open	Lithic Source Area	Field camp	
42SA17092	Open	Lithic scatter with features	Habitation site	
42SA17093	Shelter	Lithic scatter	Field camp	
42SA17094	Shelter	Masonry architecture site	Field camp	
42SA17095	Open	Sherd and lithic scatter with features	Field camp	
42SA17096	Open	Lithic scatter	Limited activity site	Secondary lithic reduction
42SA17097	Open	Lithic scatter	Limited activity site	Secondary lithic reduction
42SA17098	Open	Lithic scatter	Limited activity site	Secondary lithic reduction
42SA17099	Shelter	Lithic scatter with feature	Field camp	
42SA17100	Shelter	Lithic Source Area	Limited activity site	Lithic procurement/primary lithic reduction
42SA17101	Open	Lithic scatter	Limited activity site	Secondary lithic reduction
42SA17102	Open	Lithic scatter	Field camp	
42SA17103	Open	Lithic scatter with feature	Field camp	
42SA17104	Open	Lithic scatter with feature	Field camp	
42SA17105	Open	Features without artifacts	Limited activity site	Communication
42SA17106	Open	Features without artifacts	Limited activity site	Communication
42SA17108	Open	Lithic scatter with features	Limited activity site	Communication
42SA17109	Open	Lithic scatter	Limited activity site	Primary and secondary lithic reduction
42SA17110	Open	Lithic scatter	Field camp	
42SA17111	Open	Lithic scatter with feature	Field camp	
42SA17112	Open	Sherd and lithic scatter	Field camp	
42SA17113	Open	Sherd and lithic scatter	Field camp	
42SA17114	Open	Lithic scatter with features	Field camp	
42SA17115	Shelter	Lithic scatter with features	Field camp	
42SA17116	Open	Lithic scatter	Limited activity site	Primary and secondary lithic reduction
42SA17118	Shelter	Masonry architecture site	Habitation site	
42SA17120	Open	Historic site	Historic site	Historic site
42SA17121	Open	Masonry architecture site	Habitation site	
42SA17123	Shelter	Masonry architecture site	Habitation site	
42SA17124	Shelter	Sherd and lithic scatter	Field camp	
42SA17125	Shelter	Sherd and lithic scatter with feature	Field camp	
42SA17126	Shelter	Masonry architecture site	Field camp	
42SA17127	Shelter	Masonry architecture site	Field camp	

TABULAR SITE DATA

Table D-3. List of sites and their descriptive and functional types (continued).

Site Number	Site Setting	Descriptive Site Type	Functional Site Type	Subfunctional Site Type
42SA17128	Shelter	Sherd and lithic scatter with Feature	Field camp	
42SA17129	Open	Lithic scatter	Limited activity site	Secondary lithic reduction
42SA17130	Open	Lithic scatter	Limited activity site	Secondary lithic reduction
42SA17131	Open	Lithic scatter	Limited activity site	Secondary lithic reduction
42SA17132	Shelter	Lithic scatter with feature	Field camp	
42SA17133	Shelter	Sherd and lithic scatter	Limited activity site	Secondary lithic reduction
42SA17134	Open	Lithic scatter	Limited activity site	Primary and secondary lithic reduction
42SA17135	Open	Lithic scatter	Limited activity site	Secondary lithic reduction
42SA17136	Open	Lithic scatter	Limited activity site	Primary and secondary lithic reduction
42SA17137	Open	Lithic scatter	Limited activity site	Secondary lithic reduction
42SA17138	Open	Lithic scatter with feature	Field camp	
42SA17139	Open	Lithic scatter	Limited activity site	Secondary lithic reduction
42SA17140	Open	Sherd and lithic scatter with feature	Field camp	
42SA17141	Open	Sherd and lithic scatter with feature	Habitation site	
42SA17142	Open	Lithic scatter	Limited activity site	Primary and secondary lithic reduction
42SA17143	Open	Lithic scatter	Field camp	
42SA17144	Shelter	Masonry architecture site	Field camp	
42SA17145	Open	Lithic scatter	Field camp	
42SA17146	Open	Lithic scatter	Limited activity site	Secondary lithic reduction
42SA17147	Open	Lithic Source Area	Limited activity site	Lithic procurement/primary and secondary lithic reduction
42SA17148	Open	Lithic scatter	Field camp	
42SA17149	Shelter	Lithic source area with feature	Field camp	
42SA17150	Shelter	Lithic scatter	Field camp	
42SA17151	Open	Lithic scatter	Limited activity site	Secondary lithic reduction
42SA17152	Open	Lithic scatter	Limited activity site	Secondary lithic reduction
42SA17153	Open	Lithic scatter	Limited activity site	Secondary lithic reduction
42SA17154	Shelter	Lithic scatter with feature	Field camp	
42SA17155	Open	Lithic scatter	Limited activity site	Secondary lithic reduction
42SA17156	Open	Lithic scatter	Limited activity site	Secondary lithic reduction
42SA17157	Open	Lithic scatter	Limited activity site	Secondary lithic reduction
42SA17158	Shelter	Lithic source area	Limited activity site	Primary and secondary lithic reduction
42SA17159	Open	Lithic source area	Limited activity site	Lithic procurement/primary and secondary lithic reduction
42SA17160	Open	Lithic source area	Limited activity site	Lithic procurement/primary and secondary lithic reduction
42SA17161	Open	Lithic scatter	Limited activity site	Secondary lithic reduction
42SA17162	Open	Lithic scatter	Limited activity site	Secondary lithic reduction
42SA17163	Shelter	Sherd and lithic scatter with features	Habitation site	
42SA17164	Open	Lithic scatter	Limited activity site	Primary and secondary lithic reduction
42SA17165	Open	Lithic scatter with feature	Field camp	
42SA17166	Open	Lithic source area	Limited activity site	Lithic procurement/primary and secondary lithic reduction

## TABULAR SITE DATA

Table D-3. List of sites and their descriptive and functional types (continued).

Site Number	Site Setting	Descriptive Site Type	Functional Site Type	Subfunctional Site Type
42SA17167	Open	Lithic source area	Limited activity site	Lithic procurement/primary and secondary lithic reduction
42SA17168	Open	Lithic scatter	Limited activity site	Secondary lithic reduction
42SA17169	Open	Lithic scatter with feature	Field camp	
42SA17170	Open	Lithic scatter	Limited activity site	Secondary lithic reduction
42SA17171	Shelter	Sherd and lithic scatter with features	Field camp	
42SA17172	Open	Lithic scatter	Field camp	
42SA17173	Open	Lithic scatter	Limited activity site	Secondary lithic reduction
42SA17174	Shelter	Lithic scatter with features	Limited activity site	Communication
42SA17175	Shelter	Lithic scatter with feature	Field camp	
42SA17176	Open	Lithic scatter	Limited activity site	Secondary lithic reduction
42SA17177	Open	Sherd and lithic scatter	Limited activity site	Secondary lithic reduction
42SA17178	Open	Lithic scatter with feature	Field camp	
42SA17179	Open	Lithic scatter	Limited activity site	Primary and secondary lithic reduction
42SA17180	Open	Lithic source area	Limited activity site	Lithic procurement/primary and secondary lithic reduction
42SA17181	Shelter	Lithic scatter	Field camp	
42SA17182	Open	Lithic source area with feature	Field camp	
42SA17183	Open	Lithic scatter	Limited activity site	Primary and secondary lithic reduction
42SA17184	Shelter	Masonry architecture site	Habitation site	
42SA17185	Open	Lithic scatter	Limited activity site	Secondary lithic reduction
42SA17186	Open	Lithic scatter	Limited activity site	Primary and secondary lithic reduction
42SA17187	Open	Masonry architecture site	Field camp	
42SA17188	Open	Lithic source area and sherd scatter	Field camp	
42SA17189	Open	Lithic source area	Limited activity site	Lithic procurement/primary and secondary lithic reduction
42SA17190	Open	Lithic source area	Limited activity site	Lithic procurement/primary and secondary lithic reduction
42SA17191	Open	Lithic scatter	Limited activity site	Secondary lithic reduction
42SA17192	Open	Lithic source area	Limited activity site	Lithic procurement/primary and secondary lithic reduction
42SA17193	Open	Lithic scatter	Limited activity site	Secondary lithic reduction
42SA17194	Open	Lithic scatter with feature	Field camp	
42SA17195	Open	Historic site	Historic site	Historic site
42SA17196	Open	Lithic source area with feature	Habitation site	
42SA17197	Open	Lithic scatter	Limited activity site	Secondary lithic reduction
42SA17198	Shelter	Lithic scatter with feature	Habitation site	
42SA17199	Open	Lithic source area	Limited activity site	Lithic procurement/primary and secondary lithic reduction
42SA17200	Open	Sherd and lithic scatter with feature	Field camp	
42SA17201	Shelter	Lithic scatter	Limited activity site	Secondary lithic reduction
42SA17202	Open	Lithic scatter	Limited activity site	Secondary lithic reduction
42SA17203	Open	Lithic source area	Limited activity site	Lithic procurement/primary and secondary reduction
42SA17204	Open	Lithic scatter	Limited activity site	Primary and secondary lithic reduction

## TABULAR SITE DATA

Table D-3. List of sites and their descriptive and functional types (continued).

Site Number	Site Setting	Descriptive Site Type	Functional Site Type	Subfunctional Site Type
42SA17205	Open	Lithic scatter	Limited activity site	Primary and secondary lithic reduction
42SA17206	Shelter	Lithic source area with sherd scatter with feature	Field camp	
42SA17207	Open	Lithic scatter	Field camp	
42SA17208	Shelter	Lithic scatter	Field camp	
42SA17209	Open	Lithic scatter	Field camp	
42SA17210	Open	Lithic scatter	Limited activity site	Secondary lithic reduction
42SA17211	Open	Lithic scatter	Limited activity site	Secondary lithic reduction
42SA17212	Open	Lithic scatter	Limited activity site	Primary and secondary lithic reduction
42SA17213	Shelter	Lithic scatter with feature	Field camp	
42SA17214	Shelter	Lithic scatter	Field camp	
42SA17217	Open	Lithic scatter	Limited activity site	Secondary lithic reduction
42SA17218	Open	Lithic scatter	Limited activity site	Secondary lithic reduction
42SA17219	Shelter	Lithic source area	Field camp	
42SA17220	Open	Lithic scatter	Field camp	
42SA17221	Shelter	Lithic source area with sherd scatter with features	Field camp	
42SA17222	Open	Lithic scatter with feature	Field camp	
42SA17223	Open	Lithic scatter with feature	Limited activity site	Indeterminate

Table D-4. Number and type of artifacts on prehistoric sites and components.

Site Number	Projectile Points	Bifaces	Drills	Choppers	Unifaces and Scrapers	Gravers	Cores	Blades	Hammer- stones	Manos	Metates	Mauls	Sherds
42SA1448	.	.	.	.	.	.	.	.	.	.	.	.	.
42SA1450	.	.	.	.	.	.	.	.	.	.	.	.	.
42SA1996	.	.	.	.	.	.	.	.	.	.	.	.	.
42SA8493	1	3	.	.	.	.	.	.	.	.	.	.	2
42SA16825	.	.	.	.	.	.	.	.	.	.	.	.	.
42SA17082	.	1	1	.	.	.	3	.	.	.	.	.	.
42SA17083	.	1	.	.	.	.	.	.	.	.	1	.	.
42SA17084	.	1	.	.	.	.	1	.	.	.	.	.	.
42SA17085	.	.	.	.	.	.	.	.	.	.	.	.	.
42SA17086	.	.	.	.	.	.	.	.	.	.	.	.	.
42SA17087	.	9	.	.	.	.	.	.	.	.	.	.	1
42SA17088	1	3	.	.	.	.	1	1	.	.	.	.	.
42SA17089	.	1	.	.	.	.	7	.	.	.	.	.	.
42SA17090	.	1	.	.	1	.	.	.	.	3	1	.	1
42SA17091	1	2	.	.	.	.	2	.	.	1	.	.	.
42SA17092	1	6	.	1	.	.	3	.	1	8	3	.	.
42SA17093	.	1	.	1	1	.	3	.	.	.	.	.	.
42SA17094	.	1	.	.	.	.	.	.	.	4	1	.	13
42SA17095	.	.	.	.	.	.	.	.	.	.	.	.	11
42SA17096	3	2	.	.	.	.	.	.	.	.	.	.	.
42SA17097	.	2	.	.	1	.	.	4	.	.	.	.	.
42SA17098	.	.	.	.	.	.	.	.	.	.	.	.	.
42SA17099	.	.	.	.	.	.	.	.	.	.	.	.	.
42SA17100	1	1	.	.	.	.	.	.	1	.	.	.	.
42SA17101	.	.	.	.	.	.	.	.	.	.	.	.	.
42SA17102	.	2	.	.	.	.	.	.	1	1	.	.	.
42SA17103	.	4	.	.	.	1	.	.	1	1	.	.	.
42SA17104	.	.	.	.	.	.	.	.	.	.	.	.	.
42SA17105	.	.	.	.	.	.	.	.	.	.	.	.	.
42SA17106	.	.	.	.	.	.	.	.	.	.	.	.	.
42SA17108	.	.	.	.	.	.	.	.	.	.	.	.	.
42SA17109	.	.	.	.	.	.	.	.	.	.	.	.	.
42SA17110	.	22	.	.	.	.	1	2	.	.	.	.	.
42SA17111	.	4	.	.	.	.	.	.	.	.	3	.	.
42SA17112	.	2	.	.	3	.	.	.	1	.	.	.	1
42SA17113	.	3	.	.	.	.	.	.	.	.	.	.	1
42SA17114	.	2	.	.	.	.	.	.	.	.	.	.	.
42SA17115	.	3	.	.	.	.	.	.	.	.	.	.	.



Table D-4. Number and type of artifacts on prehistoric sites and components (continued).

Site Number	Projectile Points	Bifaces	Drills	Choppers	Unifaces and Scrapers	Gravers	Cores	Blades	Hammer-stones	Manos	Metates	Mauls	Sherds
42SA17116	1	2	.	.	.	.	.	.	.	.	.	.	.
42SA17118	.	.	.	.	.	.	.	.	.	1	.	.	.
42SA17121	4	12	.	.	1	.	2	.	1	.	.	.	14
42SA17123	.	7	.	.	.	.	2	.	3	1	3	.	1
42SA17124	1	2	.	.	.	.	1	.	2	2	.	.	10
42SA17125	3	5	.	.	.	1	.	.	1	1	1	.	7
42SA17126	1	.	.	.	.	.	1	.	.	.	.	.	3
42SA17127	.	4	.	.	.	.	1	.	1	.	.	.	.
42SA17128	3	2	.	.	.	.	4	.	.	1	1	.	11
42SA17129	.	.	.	.	.	.	.	.	.	.	.	.	.
42SA17130	.	.	.	.	.	.	.	.	.	.	.	.	.
42SA17131	.	1	.	.	.	.	.	.	.	.	.	.	.
42SA17132	.	2	.	.	.	.	.	.	.	.	.	.	.
42SA17133	.	2	.	.	.	.	1	1	.	.	.	.	1
142SA7134	.	.	.	.	.	.	.	.	.	.	.	.	.
42SA17135	.	.	.	.	.	.	.	.	.	.	.	.	.
42SA17136	.	.	.	.	.	.	.	1	.	.	.	.	.
42SA17137	.	2	.	.	.	.	.	.	.	.	.	.	.
42SA17138	.	3	.	.	.	.	.	.	.	.	.	.	.
42SA17139	1	2	.	.	.	.	.	.	.	.	.	.	.
42SA17140	1	14	.	.	.	.	1	.	.	.	.	.	1
42SA17141	2	9	.	.	.	.	1	.	1	7	5	.	1
42SA17142	1	3	.	.	.	.	.	.	1	.	.	.	.
42SA17143	2	.	.	.	.	.	1	.	1	1	.	.	.
42SA17144	.	.	.	.	.	.	.	.	.	.	.	.	.
42SA17145	.	1	.	.	.	.	1	.	.	2	.	.	.
42SA17146	.	1	.	.	.	.	.	.	.	.	.	.	.
42SA17147	.	.	.	.	.	.	.	.	.	.	.	.	.
42SA17148	.	1	.	.	.	.	.	.	.	1	.	.	.
42SA17149	.	1	.	.	.	.	.	.	.	1	1	.	.
42SA17150	.	1	.	.	.	.	.	.	.	3	1	.	.
42SA17151	.	1	.	.	.	.	.	.	.	.	.	.	.
42SA17152	.	1	.	.	1	.	.	.	.	.	.	.	.
42SA17153	2	4	.	.	.	.	.	.	.	.	.	.	.
42SA17154	.	2	.	.	.	.	3	.	1	2	.	.	.
42SA17155	.	1	.	.	.	.	.	.	.	.	.	.	.
42SA17156	.	.	.	.	.	.	.	.	.	.	.	.	.
42SA17157	1	.	.	.	.	.	.	.	.	.	.	.	.

TABULAR SITE DATA

Table D-4. Number and type of artifacts on prehistoric sites and components (continued).

Site Number	Projectile Points	Bifaces	Drills	Choppers	Unifaces and Scrapers	Gravers	Cores	Blades	Hammer- stones	Manos	Metates	Mauls	Sherds
42SA17158	1	1	.	.	.	.	.	.	.	.	.	.	.
42SA17159	1	2	.	.	.	.	.	.	.	.	.	.	.
42SA17160	2	4	.	.	.	.	1	.	.	.	.	.	.
42SA17161	.	.	.	.	.	.	.	.	.	.	.	.	.
42SA17162	1	1	.	.	.	.	.	.	.	.	.	.	.
42SA17163	.	2	.	.	.	.	1	1	1	.	1	.	1
42SA17164	.	1	.	.	.	.	.	1	.	.	.	.	.
42SA17165	1	.	.	.	.	.	.	.	.	.	.	.	.
42SA17166	.	.	.	.	.	.	.	.	.	.	.	.	.
42SA17167	.	.	.	.	.	.	.	.	.	.	.	.	.
42SA17168	.	1	.	.	.	.	.	.	.	.	.	.	.
42SA17169	1	.	.	.	.	.	.	.	.	.	.	.	.
42SA17170	.	2	.	.	.	.	.	.	.	.	.	.	.
42SA17171	.	1	.	.	.	.	.	.	1	.	1	.	8
42SA17172	.	.	.	.	.	.	1	.	.	1	.	.	.
42SA17173	.	.	.	.	.	.	.	.	.	.	.	.	.
42SA17174	.	1	.	.	.	.	.	.	.	.	.	.	.
42SA17175	1	2	1	.	.	.	.	.	.	5	2	.	.
42SA17176	.	.	.	.	.	.	.	.	.	.	.	.	.
42SA17177	.	.	.	.	.	.	.	.	.	.	.	.	1
42SA17178	.	1	.	.	.	.	.	.	.	.	1	.	.
42SA17179	.	3	.	.	.	.	.	.	.	.	.	.	.
42SA17180	.	.	.	.	.	.	8	.	.	.	.	.	.
42SA17181	.	1	.	.	.	.	.	.	.	1	.	.	.
42SA17182	.	1	.	.	.	.	1	.	1	.	.	.	.
42SA17183	.	1	.	.	.	.	1	.	.	.	.	.	.
42SA17184	1	3	.	.	1	.	.	.	1	2	3	.	.
42SA17185	.	.	.	.	.	.	.	.	.	.	.	.	.
42SA17186	.	.	.	.	.	.	.	.	.	.	.	.	.
42SA17187	.	4	.	.	.	.	.	.	.	.	.	.	7
42SA17188	1	1	.	.	.	.	1	.	2	.	.	.	2
42SA17189	.	.	.	.	.	.	.	.	.	.	.	.	.
42SA17190	.	.	.	.	.	.	.	.	.	.	.	.	.
42SA17191	.	1	.	.	.	.	.	.	.	.	.	.	.
42SA17192	.	3	.	.	.	.	1	.	.	.	.	.	.
42SA17193	.	.	.	.	.	.	.	.	.	.	.	.	.
42SA17194	.	.	.	.	.	.	.	.	.	.	.	.	.
42SA17196	1	3	.	.	.	.	1	.	1	1	.	.	.

Table D-4. Number and type of artifacts on prehistoric sites and components (continued).

Site Number	Projectile Points	Bifaces	Drills	Choppers	Unifaces and Scrapers	Gravers	Cores	Blades	Hammer- stones	Manos	Metates	Mauls	Sherds
42SA17197	.	1	.	.	.	.	.	.	.	.	.	.	.
42SA17198	.	1	.	.	.	.	.	.	1	1	.	.	.
42SA17199	.	2	.	.	.	.	2	.	.	.	.	.	.
42SA17200	.	3	.	.	.	.	3	.	.	1	.	.	4
42SA17201	.	.	.	.	.	.	.	.	.	.	.	.	.
42SA17202	.	.	.	.	.	.	.	.	.	.	.	.	.
42SA17203	.	1	.	.	.	.	2	.	.	.	.	.	.
42SA17204	.	.	.	.	.	.	.	.	.	.	.	.	.
42SA17205	.	2	.	.	.	.	2	.	.	.	.	.	.
42SA17206	.	7	.	.	.	.	1	.	2	4	1	1	2
42SA17207	.	2	.	.	2	.	.	.	1	1	.	.	.
42SA17208	.	2	.	.	.	.	.	.	1	.	1	.	.
42SA17209	.	5	.	.	1	.	1	.	.	1	1	.	.
42SA17210	.	.	.	.	.	.	.	.	.	.	.	.	.
42SA17211	.	.	.	.	.	.	.	.	.	.	.	.	.
42SA17212	.	.	.	.	.	.	.	.	.	.	.	.	.
42SA17213	.	.	.	.	.	.	.	.	.	.	.	.	.
42SA17214	.	2	.	.	.	.	1	.	.	1	.	.	.
42SA17217	.	.	.	.	.	.	.	.	.	.	.	.	.
42SA17218	.	.	.	.	.	.	.	.	.	.	.	.	.
42SA17219	.	4	.	.	.	.	2	.	.	2	1	.	.
42SA17220	.	4	.	.	.	.	.	.	1	1	.	.	.
42SA17221	.	3	.	.	1	.	.	.	3	.	3	.	10
42SA17222	.	.	.	.	.	.	.	.	.	.	.	.	.
42SA17223	.	.	.	.	.	.	2	.	.	.	.	.	.
Total	42	242	2	2	13	2	72	11	33	63	36	1	114

TABULAR SITE DATA

Table D-5. Number and type of features on prehistoric sites and components.

Site Number	Hearths	Occurrences of Smoke Blackening	Awl Sharpening Grooves	Middens	Picto- graph Panels	Petro- glyph Panels	Slab Cists	Masonry Walls	Stone Circles	Granaries	Surface Rooms	Bridges
42SA1448	.	.	.	.	4	.	.	.	.	.	.	.
42SA1450	.	.	.	.	6	.	.	.	.	.	.	.
42SA1996	.	.	.	.	2	.	.	.	.	.	.	.
42SA8493	.	.	.	.	.	.	.	.	.	.	.	.
42SA16825	.	.	.	.	1	.	.	.	.	.	.	.
42SA17082	.	.	.	.	.	.	.	.	.	.	.	.
42SA17083	.	.	.	.	.	.	.	.	.	.	.	.
42SA17084	.	.	.	.	.	.	.	.	.	.	.	.
42SA17085	.	.	.	.	.	.	.	.	.	.	.	.
42SA17086	.	.	.	.	.	.	.	.	.	.	.	.
42SA17087	.	.	.	.	.	.	.	.	.	.	.	.
42SA17088	.	.	.	.	.	.	.	.	.	.	.	.
42SA17089	.	.	.	.	.	.	.	.	.	.	.	.
42SA17090	.	.	.	1	2	.	.	.	.	.	.	.
42SA17091	.	.	.	.	.	.	.	.	.	.	.	.
42SA17092	.	.	.	1	1	.	.	.	.	.	.	.
42SA17093	.	.	.	.	.	.	.	.	.	.	.	.
42SA17094	.	.	.	.	.	.	.	.	.	.	2	.
42SA17095	.	.	.	.	.	.	2	.	.	.	.	.
42SA17096	.	.	.	.	.	.	.	.	.	.	.	.
42SA17097	.	.	.	.	.	.	.	.	.	.	.	.
42SA17098	.	.	.	.	.	.	.	.	.	.	.	.
42SA17099	.	.	.	.	1	.	.	.	.	.	.	.
42SA17100	.	.	.	.	.	.	.	.	.	.	.	.
42SA17101	.	.	.	.	.	.	.	.	.	.	.	.
42SA17102	.	.	.	.	.	.	.	.	.	.	.	.
42SA17103	1	.	.	.	.	.	.	.	.	.	.	.
42SA17104	1	.	.	.	.	.	.	.	.	.	.	.
42SA17105	.	.	.	.	1	1	.	.	.	.	.	.
42SA17106	.	.	.	.	.	4	.	.	.	.	.	.
42SA17108	.	.	.	.	2	.	.	.	.	.	.	.
42SA17109	.	.	.	.	.	.	.	.	.	.	.	.
42SA17110	.	.	.	.	.	.	.	.	.	.	.	.
42SA17111	.	.	.	1	.	.	.	.	.	.	.	.
42SA17112	.	.	.	.	.	.	.	.	.	.	.	.
42SA17113	.	.	.	.	.	.	.	.	.	.	.	.
42SA17114	2	.	.	.	.	.	.	.	.	.	.	.
42SA17115	.	1	.	.	1	.	.	.	.	.	.	.

Table D-5. Number and type of features on prehistoric sites and components (continued).

Site Number	Hearths	Occurrences of Smoke Blackening	Awl Sharpening Grooves	Middens	Pictograph Panels	Petroglyph Panels	Slab Cists	Masonry Walls	Stone Circles	Granaries	Surface Rooms	Bridges
42SA17116	.	.	.	.	.	.	.	.	.	.	.	.
42SA17118	.	.	1	.	.	.	.	.	.	.	3	2
42SA17121	.	.	.	1	.	.	.	.	.	.	2	.
42SA17123	.	1	.	1	.	.	.	2	.	.	1	.
42SA17124	.	.	.	.	.	.	.	.	.	.	.	.
42SA17125	.	1	.	1	.	.	.	.	.	.	.	.
42SA17126	.	.	.	.	.	.	.	.	.	.	2	.
42SA17127	.	.	.	.	.	.	.	.	.	.	2	.
42SA17128	1	.	.	.	.	.	.	1	.	.	.	.
42SA17129	.	.	.	.	.	.	.	.	.	.	.	.
42SA17130	.	.	.	.	.	.	.	.	.	.	.	.
42SA17131	.	.	.	.	.	.	.	.	.	.	.	.
42SA17132	.	.	.	.	.	.	.	1	.	.	.	.
42SA17133	.	.	.	.	.	.	.	.	.	.	.	.
42SA17134	.	.	.	.	.	.	.	.	.	.	.	.
42SA17135	.	.	.	.	.	.	.	.	.	.	.	.
42SA17136	.	.	.	.	.	.	.	.	.	.	.	.
42SA17137	.	.	.	.	.	.	.	.	.	.	.	.
42SA17138	1	.	.	.	.	.	.	.	.	.	.	.
42SA17139	.	.	.	.	.	.	.	.	.	.	.	.
42SA17140	1	.	.	.	.	.	.	.	.	.	.	.
42SA17141	3	.	.	.	.	.	.	.	.	.	.	.
42SA17142	.	.	.	.	.	.	.	.	.	.	.	.
42SA17143	.	.	.	.	.	.	.	.	.	.	.	.
42SA17144	.	.	.	.	1	.	1	.	.	.	1	.
42SA17145	.	.	.	.	.	.	.	.	.	.	.	.
42SA17146	.	.	.	.	.	.	.	.	.	.	.	.
42SA17147	.	.	.	.	.	.	.	.	.	.	.	.
42SA17148	.	.	.	.	.	.	.	.	.	.	.	.
42SA17149	.	.	.	1	.	.	.	.	.	.	.	.
42SA17150	.	.	.	.	.	.	.	.	.	.	.	.
42SA17151	.	.	.	.	.	.	.	.	.	.	.	.
42SA17152	.	.	.	.	.	.	.	.	.	.	.	.
42SA17153	.	.	.	.	.	.	.	.	.	.	.	.
42SA17154	.	.	.	.	.	.	.	1	.	.	.	.
42SA17155	.	.	.	.	.	.	.	.	.	.	.	.
42SA17156	.	.	.	.	.	.	.	.	.	.	.	.
42SA17157	.	.	.	.	.	.	.	.	.	.	.	.

TABULAR SITE DATA

Table D-5. Number and type of features on prehistoric sites and components (continued).

Site Number	Hearths	Occurrences of Smoke Blackening	Awl Sharpening Grooves	Middens	Pictograph Panels	Petroglyph Panels	Slab Cists	Masonry Walls	Stone Circles	Granaries	Surface Rooms	Bridges
42SA17158	.	.	.	.	.	.	.	.	.	.	.	.
42SA17159	.	.	.	.	.	.	.	.	.	.	.	.
42SA17160	.	.	.	.	.	.	.	.	.	.	.	.
42SA17161	.	.	.	.	.	.	.	.	.	.	.	.
42SA17162	.	.	.	.	.	.	.	.	.	.	.	.
42SA17163	1	.	.	1	.	.	.	.	1	.	.	.
42SA17164	.	.	.	.	.	.	.	.	.	.	.	.
42SA17165	.	.	.	1	.	.	.	.	.	.	.	.
42SA17166	.	.	.	.	.	.	.	.	.	.	.	.
42SA17167	.	.	.	.	.	.	.	.	.	.	.	.
42SA17168	.	.	.	.	.	.	.	.	.	.	.	.
42SA17169	1	.	.	.	.	.	.	.	.	.	.	.
42SA17170	.	.	.	.	.	.	.	.	.	.	.	.
42SA17171	1	.	.	.	1	.	.	.	.	.	.	.
42SA17172	.	.	.	.	.	.	.	.	.	.	.	.
42SA17173	.	.	.	.	.	.	.	.	.	.	.	.
42SA17174	.	.	.	.	.	2	.	.	.	.	.	.
42SA17175	.	.	.	1	.	.	.	.	.	.	.	.
42SA17176	.	.	.	.	.	.	.	.	.	.	.	.
42SA17177	.	.	.	.	.	.	.	.	.	.	.	.
42SA17178	1	.	.	.	.	.	.	.	.	.	.	.
42SA17179	.	.	.	.	.	.	.	.	.	.	.	.
42SA17180	.	.	.	.	.	.	.	.	.	.	.	.
42SA17181	.	.	.	.	.	.	.	.	.	.	.	.
42SA17182	.	.	.	1	.	.	.	.	.	.	.	.
42SA17183	.	.	.	.	.	.	.	.	.	.	.	.
42SA17184	.	.	.	.	.	.	.	.	.	.	1	.
42SA17185	.	.	.	.	.	.	.	.	.	.	.	.
42SA17186	.	.	.	.	.	.	.	.	.	.	.	.
42SA17187	.	.	.	1	.	2	.	.	.	2	.	.
42SA17188	.	.	.	.	.	.	.	.	.	.	.	.
42SA17189	.	.	.	.	.	.	.	.	.	.	.	.
42SA17190	.	.	.	.	.	.	.	.	.	.	.	.
42SA17191	.	.	.	.	.	.	.	.	.	.	.	.
42SA17192	.	.	.	.	.	.	.	.	.	.	.	.
42SA17193	.	.	.	.	.	.	.	.	.	.	.	.
42SA17194	1	.	.	.	.	.	.	.	.	.	.	.
42SA17196	.	.	.	1	.	.	.	.	.	.	.	.

Table D-5. Number and type of features on prehistoric sites and components (continued).

Site Number	Hearths	Occurrences of Smoke Blackening	Awl Sharpening Grooves	Middens	Picto- graph Panels	Petro- glyph Panels	Slab Cists	Masonry Walls	Stone Circles	Granaries	Surface Rooms	Bridges
42SA17197	.	.	.	.	.	.	.	.	.	.	.	.
42SA17198	.	.	.	1	.	.	.	.	.	.	.	.
42SA17199	.	.	.	.	.	.	.	.	.	.	.	.
42SA17200	.	.	.	.	.	1	.	.	.	.	.	.
42SA17201	.	.	.	.	.	.	.	.	.	.	.	.
42SA17202	.	.	.	.	.	.	.	.	.	.	.	.
42SA17203	.	.	.	.	.	.	.	.	.	.	.	.
42SA17204	.	.	.	.	.	.	.	.	.	.	.	.
42SA17205	.	.	.	.	.	.	.	.	.	.	.	.
42SA17206	.	.	.	.	.	.	.	1	.	.	.	.
42SA17207	.	.	.	.	.	.	.	.	.	.	.	.
42SA17208	.	.	.	.	.	.	.	.	.	.	.	.
42SA17209	.	.	.	.	.	.	.	.	.	.	.	.
42SA17210	.	.	.	.	.	.	.	.	.	.	.	.
42SA17211	.	.	.	.	.	.	.	.	.	.	.	.
42SA17212	.	.	.	.	.	.	.	.	.	.	.	.
42SA17213	.	.	.	1	.	.	.	.	.	.	.	.
42SA17214	.	.	.	.	.	.	.	.	.	.	.	.
42SA17217	.	.	.	.	.	.	.	.	.	.	.	.
42SA17218	.	.	.	.	.	.	.	.	.	.	.	.
42SA17219	.	.	.	.	.	.	.	.	.	.	.	.
42SA17220	.	.	.	.	.	.	.	.	.	.	.	.
42SA17221	.	.	.	1	1	.	.	.	.	.	.	.
42SA17222	1	.	.	.	.	.	.	.	.	.	.	.
42SA17223	.	.	.	.	.	.	.	.	1	.	.	.
<b>Total</b>	<b>16</b>	<b>3</b>	<b>1</b>	<b>16</b>	<b>24</b>	<b>10</b>	<b>3</b>	<b>6</b>	<b>2</b>	<b>2</b>	<b>14</b>	<b>2</b>



# TABULAR SITE DATA

Table D-6. Number and type of features on historic sites and components.

Site Number	Cairns	Historic Hearths	Fences	Gates	Holding Pens	Corrals	Rock Walls	Rock Rooms	Dams
42SA1461	.	1	7	4	.	3	.	.	.
42SA17093	1	.	.	.	.	.	1	.	.
42SA17120	.	.	.	.	.	.	2	1	3
42SA17157	.	1	3	1	1	.	.	.	.
42SA17196	.	1	3	2	.	.	.	.	.
Total	1	3	13	7	1	3	3	1	3

## APPENDIX E

### SUPPLEMENTAL MAPS

BLANK PAGE

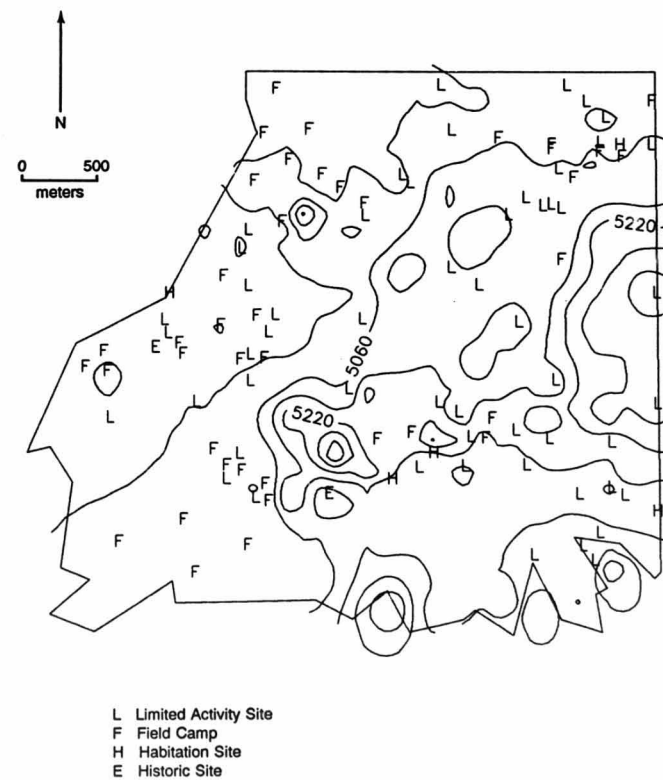


Figure E-1. Site locations by site type in the Salt Creek Pocket Area.

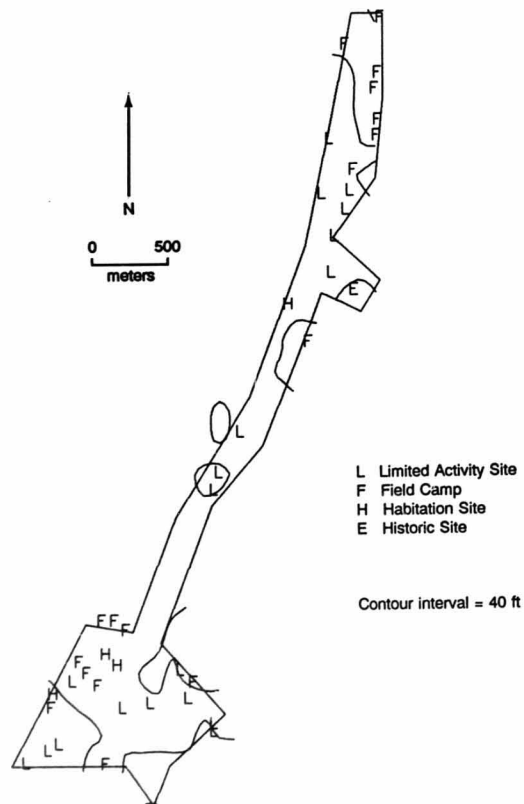


Figure E-2. Site locations by site type in the Devils Lane Area.

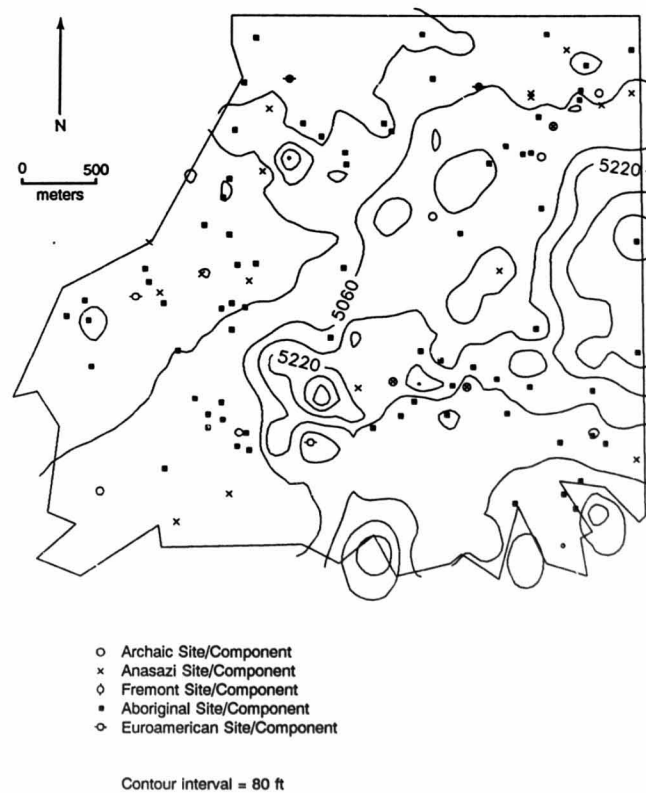


Figure E-3. Site and component locations by cultural affiliation in the Salt Creek Pocket Area.

SUPPLEMENTAL MAPS

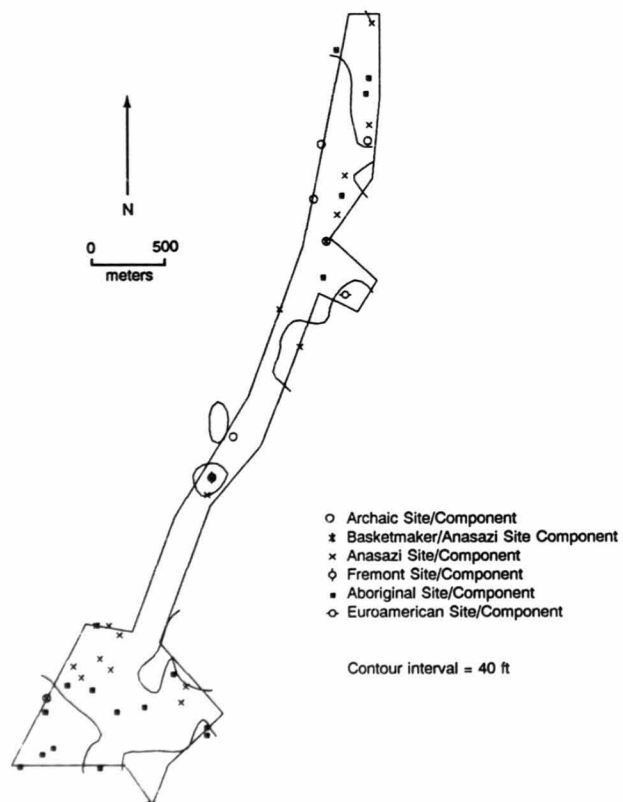


Figure E-4. Site and component locations by cultural affiliation in the Devils Lane Area.

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APPENDIX F

IMACS SITE FORMS AND ATTACHMENTS

(Limited Distribution)

Copies Available From:

Utah Division of State History, Salt Lake City, Utah

Canyonlands National Park, Moab, Utah

Midwest Archeological Center, Lincoln Nebraska

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